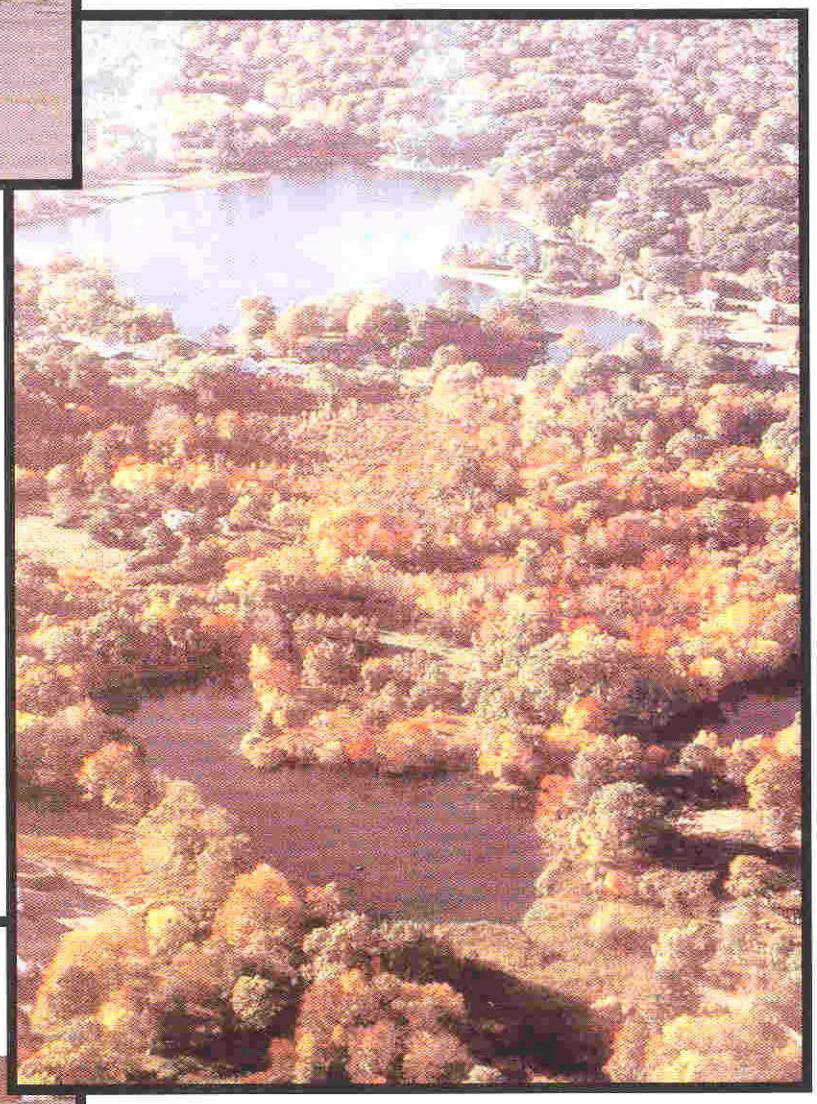
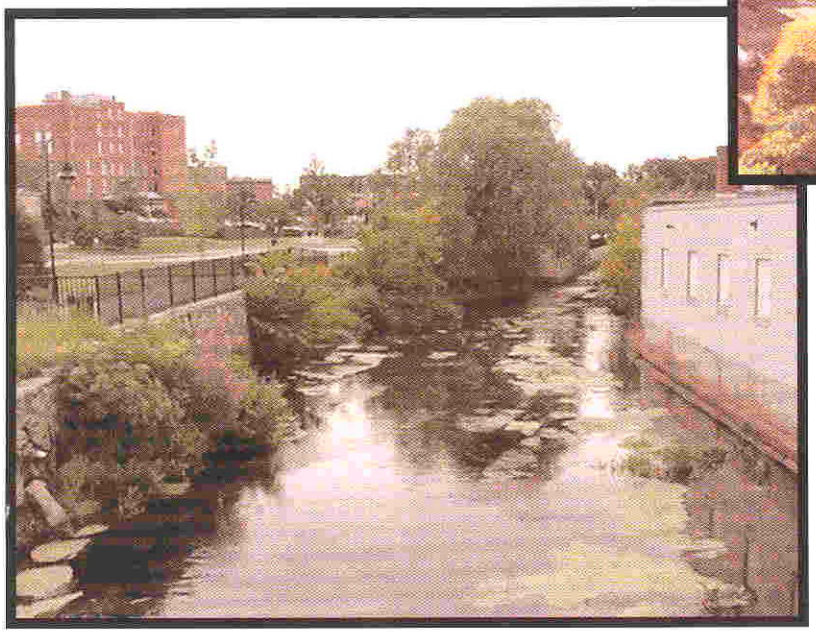
Executive Office of Environmental Affairs

Ten Mile River Watershed Team



Watershed Action Plan 2002-2006

A Plan to Protect and Enhance our Rivers, Ponds, and Communities



Communities Connected by Water

MASSACHUSETTS Watershed INITIATIVE

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July 2001

Dear Friends of the Ten Mile River Watershed:

I am pleased to present to you the Watershed Action Plan for the Ten Mile River Watershed. This plan will guide state and local environmental actions within the Ten Mile River Watershed over the next five years, implementing the goals of the Massachusetts Watershed Initiative including: improving water quality, restoring natural flows to rivers, protecting and restoring biodiversity and their habitats, improving public access and balanced resource use, improving local capacity and promoting a shared responsibility for watershed protection and management.

The EOEA Ten Mile River Watershed Team has developed this Watershed Action Plan with technical assistance from the Tellus Institute, the Southeast Regional Planning and Economic Development District, and extensive public participation. The Watershed Initiative is unique because it focuses on the problems and challenges identified with local community partners in each watershed, rather than deciding these priorities solely at the state level. In the Ten Mile River Watershed, the priority issues and action plans identified in this document include:

- Restoring the quality of the rivers and lakes to fishing and swimming standards;
- Building on the communities' sense of environmental stewardship through education;
- Minimizing flooding and maximizing fish passage throughout the watersheds; and
- Reducing the negative impacts of growth through sound local growth management and protection of regionally significant open space.

I commend all involved with the Ten Mile River Watershed effort. Thank you for your dedication, perseverance, and commitment to help implement the Action Plan. The watershed team approach is the best way for government and community partners to make significant progress in addressing the environmental challenges of the 21st Century. If you are not currently involved, I strongly encourage you to contact Andrea Langhauser, the Ten Mile River Watershed Team Leader, at (508) 946 2878, to become active in the Ten Mile River Watershed restoration and protection efforts.

Very truly yours,

Bob Durand

Bob Durand
Secretary of Environmental Affairs

Ten Mile River Watershed

Five Year Watershed Action Plan
Calendar Years 2002-2006

June 2001

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The Ten Mile River Watershed Action Plan is being distributed to public Libraries and the city or town hall of each watershed community. Copies are available upon request from Andrea Langhauser, EOEA Watershed Team Leader, by phone at 508-946-2878 pr by email at Andrea.Langhauser@state.ma.us. The Action Plan can also be downloaded from the team's website by setting your browser at http://www.state.ma.us/envir/mwi/tenmile.htm.

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1. Introduction

Purpose and Structure of this Plan

This Five Year Watershed Action Plan (WAP) will serve as the strategic plan for the multi-stakeholder Ten Mile River Watershed Team for calendar years 2002-2006. In addition to describing overall goals and objectives (Chapter 2) and a long-term vision for the watershed (Chapter 7), the WAP recommends numerous concrete actions for the next five years to work toward those longer-term goals and objectives (Chapter 3). The Action Plan Matrix in Chapter 6, which recommends lead parties and funding sources for each action, provides a clear strategy for accomplishing the recommended actions and reaching the Team's five-year goals.
The actions in this plan are structured according to five overarching goals for the Ten Mile River Watershed, each of which includes several smaller objectives. The five goals, which are based on the Ten Mile River Watershed Team's "Top Five Watershed Priorities," are:

1. Restore and Promote the Water Quality of Rivers and Ponds
2. Build a Sense of Stewardship within the Community
3. Improve the River's Physical Characteristics and Functions
4. Reduce Negative Impacts of Growth on the Watershed's Environment
5. Implement the Regional Open Space Plan

These watershed-level goals tailor the six primary goals of the Massachusetts Watershed Initiative (which are described below) to the specific needs of the Ten Mile River Watershed.
The WAP is structured as follows:

- The remainder of Chapter 1 provides brief overviews of the Massachusetts Watershed Initiative, the Ten Mile River Watershed and its Watershed Team, and the process the Watershed Team used to develop the WAP. It also provides some examples of the correlation between this plan and the Performance Partnership Agreement between US EPA and MA, an important planning document for the state.
- Chapter 2 describes each of the five goals listed above in more detail and outlines the individual objectives under each goal.
- Chapter 3 lists the actions to be taken toward these objectives in the next five years, including both actions the Team, its members, and its partners propose to undertake and ongoing actions that will continue into the five-year period of the Watershed Action Plan.
- Chapter 4 discusses the Center for Watershed Protection's Rapid Watershed Planning methodology and how it was applied to the subwatersheds of the Ten Mile River Watershed in the process of developing this Action Plan.
- Chapter 5 lists the watershed indicators that the Team will use to track progress.
- Chapter 6 is the Action Plan Matrix, which includes the recommended lead parties, suggested funding sources, and expected schedule for each action described in Chapter 3.
- Chapter 7 describes the Watershed Team's overall vision for the watershed.
- The appendices provide detailed information on the watershed, the Watershed Team, and the policy context for the watershed planning process.

The Massachusetts Watershed Initiative

The Massachusetts Watershed Initiative is a broad partnership of state and federal agencies, conservation organizations, businesses, municipal officials and individuals. Begun in 1996 by the Massachusetts Executive Office of Environmental Affairs, the MWI is an innovative, results-oriented program that protects and restores natural resources and ecosystems on a watershed basis by:

- Finding the sources of pollution and taking cooperative action to clean them up;
- Teaching and helping groups and communities to protect and restore their local waters;
- Expanding communication among local, private and public partners so everyone works together to solve water resource problems;
- Improving coordination among government agencies; and,
- Directing resources to critical needs so our limited dollars go further to resolving the most important problems.

Watershed teams, made up of representatives of governmental agencies and community partners (non-profit organizations, municipal boards, and businesses), coordinate the watershed protection efforts in each of the 27 major watersheds of Massachusetts. Since 1998, each team has had a full-time leader employed by EOEA.

The Watershed Teams focus on an innovative five-year management process that is designed to collect and share resources and information, target existing and potential impacts to natural resources, assess impacts to natural resources, and develop and implement activities to protect and improve the Commonwealth's land and water resources. The five-year process is sequenced such that year builds on the work of the previous year. Annual Work Plans are developed with active team involvement and serve as a guide for coordinating Watershed Team efforts. The Annual Work Plans are the building blocks of the more comprehensive Five Year Watershed Action Plan. Action Plans influence which projects receive state and federal grants and loans, regulatory decision-making, and educational/technical assistance programs to solve the most important environmental problems affecting communities.

The primary goals of the Watershed Initiative are to:

- Improve water quality;
- Restore natural flows to rivers;
- Protect and restore habitats;
- Improve public access and balanced resource use;
- Improve local capacity to protect water resources; and,
- Promote shared responsibility for watershed protection and management.

Each Watershed Team incorporates these broad goals into its own set of watershed-level goals, the "Five Watershed Priorities." The five goals for the Ten Mile River Watershed are described in Chapter 2.

The Ten Mile River Watershed

The Ten Mile River Watershed is located in southeastern Massachusetts and a small portion of northeastern Rhode Island. The Ten Mile Watershed is the smallest of the 27 major watersheds in Massachusetts, and is bordered by the Blackstone River, Charles River, Taunton River, and Narragansett Bay watersheds. The Ten Mile River originates from its headwaters in the Town of Plainville, and meanders south across the Massachusetts and Rhode Island border, before ultimately emptying into the Seekonk and Providence Rivers of Narragansett Bay.

The Ten Mile River picks up flow from two major tributaries, the Seven Mile River and the Bungay River, located in Attleboro. The Bungay River, whose headwaters extend into Foxborough, is flanked by the best red maple swamp habitat in Massachusetts, and provides home to rare plant species and brook trout. The Seven Mile River provides a surface drinking water supply to the city of Attleboro through the reservoirs of Hoppin Hill, Manchester, Luthers and Orrs Pond.

Attleboro and North Attleborough comprise the urban core of the watershed that, at the turn of the century, supported a diversified mix of industries led by jewelry plating and textiles. As a result of increasing levels of industrial use and residential development, the Ten Mile River was grossly polluted by the mid 1900s. The Ten

Mile is much cleaner today thanks in part to the construction of two wastewater treatment plants and the introduction of pre-treatment of wastes by industries along the river. However, high concentrations of metals in the water column and sediments and nutrient enrichment (such as phosphorus and nitrogen) continue to impact the basin's biological communities and diminish its full recreational potential. Excessive nutrients can result in accelerated growth of aquatic weeds and algae and low dissolved oxygen levels, which can impair recreational uses such as swimming and boating.

The Ten Mile River and nearly all its tributaries are designated as Class B ("fishable and swimmable") waters. The Four Mile Brook and the upper reach of the Seven Mile River are the only year-round water bodies in the watershed designated as Class A "outstanding resource" waters (ORWs). In addition, the watershed contains a number of vernal pools, seasonal water bodies that are also considered ORWs. However, the entire Ten Mile River is listed on the state impaired waters [303(d)] list as not meeting surface water quality standards. Also included on the 303(d) list is the entire length of the Seven Mile River, Thatcher (Speedway) Brook, Dodgeville Pond, and four other ponds pending confirmation. The state list of impaired waters, better known as the 303(d) list, identifies rivers, lakes, and coastal water bodies and the reasons for their impairments. The Massachusetts 1998 Section 303(d) list of waters can be found on DEP's website at www.state.ma.us/dep/brp/wm/wmpubs.htm.

There are nineteen public water suppliers in the watershed according to DEP records. Each municipality has a community public water supply. There are eleven Water Management Act Permits and four major National Pollutant Discharge Elimination System (NPDES) permits in the watershed. There are also five minor NPDES permits in the watershed. (See Appendix A: Major Permits Issued in the Ten Mile River Watershed).

Watershed Team and Recent Accomplishments

The EOEA Ten Mile River Watershed Team consists of representatives of state agencies (EOEA; Department of Environmental Protection [DEP]; Office of Technical Assistance [OTA]; Department of Fisheries, Wildlife, and Environmental Law Enforcement [DFWELE] Riverways Program and Division of Fisheries and Wildlife; and Department of Environmental Management [DEM]), federal agencies (Environmental Protection Agency [EPA] and Natural Resources Conservation Service [NRCS]), the regional planning agency (Southeast Regional Planning and Economic Development District [SRPEDD]), municipalities (Attleboro, North Attleborough, and Plainville), and watershed associations (Ten Mile River Watershed Alliance [TMRWA] and Save the Bay). The town of Seekonk is in regular communication with the team and is represented on subcommittee activities. See Appendix B for a list of watershed team members and partners.

The Watershed Team has played a significant role in the past few years in increasing communication and coordination between Team members and partners. Through the Team's communication channels, the skills of different partners have been brought together for greater accomplishments than could be achieved independently.

The accomplishments of the Watershed Team and its members and partners in the past few years include:

- DEM, the City of Attleboro, the Attleboro Land Trust, and the Ten Mile River Watershed Alliance (TMRWA) have worked together to improve public access at Larson Woodlands, a riverfront property. DEM provided financial and technical support for building trails at Larson Woodlands, a Land Trust property, while TMRWA volunteers conducted much of the trail work.
- DEP and the Ten Mile River Watershed Team provided support to the Seekonk Water District for an assessment of the Coles Brook in 1999 to investigate a drinking water contamination event. The assessment is currently being followed up with volunteer shoreline survey and water quality monitoring efforts as well as with a DEP-funded project to develop a Wellhead Protection Plan for the area. Riverways, the TMRWA, and Seekonk High School Environmental Club are active in this task.
- The towns of Plainville and North Attleborough received a $4.5 million dollar loan from the State Revolving Loan Fund for a joint water filtration plant.
- The Team in the FY'01 and '02 MWI Roundtable has funded a 3 phase Comprehensive Water Supply Plan for the Ten Mile-Narragansett Watersheds.

- A Communities Connected by Water/Planning for Growth grant to SRPEDD, TMRWA, and the Towns of Plainville and North Attleborough has been used to create this Watershed Action Plan while simultaneously conducting land use planning in the Seven Mile River Watershed and west sides of Plainville and North Attleborough, a key region of the watershed experiencing development pressure.
- Conceptual agreement has been reached on an Emergency Response Plan that coordinates dam management between Attleboro and North Attleborough to minimize downstream flooding.
- A teacher from Willett School in Attleboro received the EOEA Secretary's high honor in Environmental Education in 1999 and 2000, while a North Attleborough teacher received an honorable mention in 1999.
- The DEM Office of Dam Safety recently completed a study of several dams in the watershed, and the Army Corps of Engineers (ACOE) is currently conducting further flooding assessments.
- EOEA Wetlands Restoration and Banking Program secured funding for a Wetlands Restoration Plan for the Ten Mile River and Narragansett Bay Watersheds in 1999 through the Corporate Wetlands Banking Program and the ACOE.
- A Regional Open Space Committee, facilitated by SRPEDD with funding from the Watershed Team, recently completed a Regional Open Space Plan for the Ten Mile River and Narragansett Bay watersheds. The committee includes representation from six municipalities, watershed associations, and the Massachusetts Audubon Society. Each involved municipality has committed to incorporate the Regional Open Space Plan in its local Open Space Plan, the Watershed Team has dedicated funding in FY'02 for a coordinator to work with municipalities on Plan implementation, and EOEA's Division of Conservation Services (DCS) will provide five bonus points for implementation of land conservation projects funded through the Self Help Programs.
- An Interbasin Transfer application from Mansfield was presented to the team in 1999 by the DEM Project Manager for early discussion and information gathering, which led to the Water Resource Commission finding the project was significant and required more thorough review. The Water Resource Commission and DEP conditionally approved the Application in 2000. The Team continues to follow the monitoring schedule.
- The City of Attleboro was awarded Self Help funds to preserve key Bungay River lands with support of Team members including Mass. Division of Fish & Wildlife, Mass. Audubon, TMR Watershed Alliance, Ducks Unlimited, SRPEDD, and the EOEA Watershed Team Leader.
- There has been a clean up of groundwater contamination at the Balfour Building, a riverfront site on East Street, North Attleborough.
- In 1997, an abandoned factory along the Ten Mile River in downtown Attleboro was razed to create the Balfour River Walk, through the coordinated efforts of the City of Attleboro, DCS, DEM, and SRPEDD.

The Five Year Action Planning Process

This Five Year Watershed Action Plan (WAP) is the end product of an extensive planning process. The process used by the Team was designed to include as much input as possible not only from various members of the Watershed Team but also by other stakeholders throughout the watershed. Because successful implementation of the Watershed Action Plan will require participation by everyone in the watershed, the Team considered it essential that as many people and organizations as possible have a say in choosing the priorities for inclusion in the Plan. A brief overview of the process is provided here; for a complete list of Watershed Team, subcommittee, and public meetings see Appendix M.

As a starting point for deciding what actions to include in the plan, the Team's planning subcommittee compiled a large list of actions proposed or underway for the watershed. These actions were drawn from a number of sources, including the Watershed Team's *1999, 2000, 2001, and 2002 Annual Work Plans*; the Department of Environmental Protection's (DEP) *Ten Mile River Basin 1997 Water Quality Assessment Report*; DEP's Performance Partnership Agreement with the US EPA; DEP's draft *Ten Mile River Watershed Nonpoint Source*

Action Strategy; municipal planning documents such as comprehensive plans, capital improvements plans, and open space plans; and suggestions made at public meetings in Attleboro and Seekonk in September 2000. Working from this long list of actions, the subcommittee narrowed the list of priorities for the next five years. Simultaneously, SRPEDD worked with MGIS to prepare an impervious cover study of the principal subwatersheds using the Rapid Watershed Assessment Method developed by the Center for Water Protection, Maryland and described in its 1998 *Rapid Watershed Planning Handbook*. Through this method, the team was able to categorize the major subwatershed areas as sensitive, impacted or restorable, for which literature then suggests different management recommendations.

In April and May 2001, the Watershed Team met with municipal officials and local citizens in the major watershed communities to check facts and gather input on the chosen recommendations.

In June 2001, the Team completed a draft Action Plan and made the draft plan available for public comment during the three week period from June 1 - June 22. To allow for easy access, the Watershed Team posted the draft plan on its website. The Team also distributed the draft plan to key agency representatives and partners, and held two public meetings on the draft plan, one in Plainville and one in North Attleborough. The plan was then revised based on the input gained throughout the comment period.

In five years, when this plan reaches completion, the Watershed Team will develop an updated plan for the next five year cycle.

Coordination with state and federal agencies

As part of this planning process, the WAP Subcommittee of the EOEA Watershed Team reviewed the Performance Partnership Agreement (PPA) between US EPA and MA DEP to determine the correlation between the goals of the PPA and the goals and actions of the Watershed Action Plan. Following is an analysis of that correlation, listing the WAP objectives and actions that directly meet individual goals of the PPA:

PPA Clean Water Operational Goal #2: Reduce, eliminate, and/or control both point and nonpoint discharges to surface and groundwater

<u>WAP Objective 1.1 Identify and minimize point sources of pollution throughout the watershed.</u>

- Action 1.1.1 Design and construct sewering for priority areas in Attleboro and North Attleborough, as well as any necessary treatment plant upgrades. (and Actions 1.18, 1.19, 1.3.2, 1.3.8)
- Action 1.1.2 Implement monitoring recommendations of DEP's 1997 Water Quality Assessment of the Ten Mile River (and Actions 1.1.12, 1.1.13)
- Action 1.1.3 Reissue Minor NPDES Permits

<u>WAP Objective 1.2 Identify and minimize nonpoint sources of pollution to rivers</u>

- Action 1.2.1 Implement nonpoint source reduction recommendations in the forthcoming MWI FY01 nonpoint source assessment of the watershed and in DEP's Ten Mile River Watershed Nonpoint Source Action Strategy (see Appendix K for a copy of the DEP strategy). Recommendations include:
- Action 1.2.4 Identify nonpoint sources during shoreline survey/field reconnaissance along the Bungay River, as described in Action 1.1.2.

<u>WAP Objective 1.3 Identify and minimize nonpoint sources of pollution to lakes and ponds.</u>

- Action 1.3.1 Complete assessments of the 32 lakes and ponds in the watershed

<u>WAP Goal #2 Build a sense of stewardship within the community.</u>

- All Objectives and Actions. PPA CWA Goal #2 includes a reference to implementing watershed-based public outreach

PPA Super Goal: Achieve Clean Water and Protect Aquatic Ecosystems

WAP Objective 3.2 Create physical characteristics to fully support aquatic life

PPA CWA Operational Goal #3 No Net Loss of Wetlands

WAP Objective 5.1 Preserve open space and unique wildlife areas:

- Action 5.1.1 Support municipal and intermunicipal land preservation and acquisition projects where consistent with the Regional Open Space Plan (Regional Open Space Plan priorities include key wetlands in the watershed).
- Action 5.1.2 Review and prioritize for implementation the recommendations of the Wetlands Restoration Plan for the Ten Mile Watershed.

2. Goals and Objectives

Goal #1: Restore and Promote the Water Quality of Rivers and Ponds

One of the primary goals of the Ten Mile River Watershed Team is to restore and promote water quality throughout the watershed. This goal includes the 32.8 river miles of the Ten Mile River and its tributaries – Scott's Brook, the Bungay River, Speedway (Thatcher) Brook, the Seven Mile River, Fourmile Brook, and Coles Brook. This goal also extends to the 36 lakes and impoundments in the watershed.

How do we know if these waters are of high quality? We look to the state's classification system, which indicates the intended purpose of a each surface water body and sets water quality standards for each intended use. For example, in this watershed, the upper Seven Mile River and its tributaries are designated as Class A, and should therefore be clean enough to be used as a source of drinking water. The remaining waters in the watershed are designated as Class B. This means they should be of a quality to serve as a habitat for fish and be safe for primary (swimming) and secondary (boating, fishing) contact recreation. The state has developed criteria by which we can judge if the waters are supporting aquatic life, suitable for fish consumption, safe for recreation, and aesthetically pleasing.

Another source of information on water quality is the state 303(d) list of impaired waters, which identifies impaired rivers, lakes , and coastal water bodies and the reasons for their impairments. The entire Seven Mile River is on the Massachusetts 303(d) list, as are is the entire length of the Ten Mile River, Thatcher (Speedway) Brook, Dodgeville Pond, and four other ponds pending confirmation.

The Team's goal is for the waters of the Ten Mile River Watershed to meet their state designations and be fully supporting all of these uses. This, unfortunately, is not the case now. Historically, the Ten Mile River Watershed has hosted a variety of industrial operations, primarily jewelry and textile manufacturers, that have left behind a legacy of contamination. In addition, water quality has been threatened in recent years by the pressures of increasing development. In order to improve water quality within the watershed, the Team has developed the following objectives:

Objective 1.1: Identify and minimize point sources of pollution throughout the watershed

"Point sources" refers to identifiable, discrete sources of pollution to rivers and ponds, such as pipe discharges from businesses or sewage treatment plants. These point sources are only legal if they are permitted under a federal program called the National Pollutant Discharge Elimination System, or NPDES. The Team will work with EPA and DEP to ensure that all NPDES permits in the watershed, both major and minor, are accurate and — perhaps most in question – current. All NPDES permit holders should be fully in compliance with these permits. This objective also includes activities related to sewage treatment systems and stormwater treatment systems, as these sources are included in the NPDES program.

Objective 1.2: Identify and minimize nonpoint sources of pollution to rivers

"Nonpoint sources" applies to all other types of water pollution, generally stormwater runoff from precipitation and snowmelt, that can contain motor oils, floating debris, silt, salts, bacteria, pesticides and fertilizers — any substance that water can collect flowing over paved or unpaved areas. Other nonpoint sources of pollution include leaks and spills, release from contaminated sediments, septic systems, and soil erosion. Potential nonpoint source concerns in the Ten Mile River Watershed also include highway and road runoff and pesticides and fertilizers from landscaping and agriculture.

Objective 1.3: Identify and minimize nonpoint sources of pollution to lakes and ponds

Similar to Objective 1.2, but for lakes and ponds. This will include comprehensive lake assessments, with attention to the goal of providing fishable and swimmable waters.

Objective 1.4: Remediate and prevent the spread of invasive species

Invasive plant species, and especially nonnative plants, upset the balance of natural ecosystems. To preserve the natural system, invasive species must be controlled to allow native species to thrive.

Goal #2: Build a Sense of Stewardship within the Community

Many public agencies have responsibilities to protect the resources and environment of this watershed. Other organizations have voluntarily taken on a stewardship role as a result of their concern. Still other organizations and individuals, while possibly concerned for their community, have not realized the need for their stewardship of the watershed. For all of these groups, the Team has the goal of a strong, responsible, and informed sense of stewardship for the valuable natural resources: safe drinking water, rivers for fishing, ponds for swimming, and the aesthetic and ecological values of clean lakes, flowing rivers, and functioning wetlands. A Watershed Team with diverse and active members, strong and informed advocacy groups, and aware citizens make this sense of stewardship possible.

Objective 2.1: Build the TMRW Team

The Watershed Team needs to continue to build partnerships with stakeholders. One of the roles of the Team is to provide a clearinghouse function, connecting members and the institutions they represent. Each Team member is expected to play an active role as a liaison between his or her organization and the Team, providing information, contacts, and assistance to the Team as needed. The Team also intends to increase its partnership with similar agencies and organizations in Rhode Island, since part of the Ten Mile River Watershed is located in Rhode Island.

Objective 2.2: Strengthen regional and local watershed advocacy groups and activities

This objective includes promoting collaboration among groups such as the Ten Mile River Watershed Alliance, Seekonk Land Trust, Attleboro Land Trust, the Natural Resource Trust of Plainville, local conservation commissions, MA Audubon Society, and Save The Bay, as well as supporting the activities of individual organizations. For the TMRWA, this includes broadening activities outside Attleboro. It also includes making the knowledge and resources of the various state agencies available to support these groups for activities that are consistent with State goals and this Plan.

As part of this effort, the Team and local groups will work to continue and enhance water quality-related citizen activities. Community groups can play an important role in maintaining water quality. For years, the Ten Mile River Watershed Alliance, North Attleborough Conservation Commission, and Plainville Boy Scouts have organized river clean-ups to enhance water quality and river aesthetics. The Team would like to work with these and other interested organizations to continue and coordinate these clean-ups as well as other related efforts such as citizen monitoring programs and volunteer-led shoreline surveys that can lead to the discovery of pollution sources.

Objective 2.3: Promote environmental education and awareness at the municipal level and in the community as a whole

People will care about what they know about and understand. Our objective is to build awareness in the watershed's cities and towns about natural resources, their need for protection, and ways these natural resources could be protected. The public should be informed about recreational opportunities, public access areas, and all current activities to improve water quality.

Goal #3: Improve the River's Physical Characteristics and Functions

The physical characteristics of a river can be as important as chemical or biological quality. The river's streamflow conditions, depth, level of siltation, and the existence of dams can have a profound effect on how

well the river fulfills a community's needs. The Ten Mile River and its flood plain have been altered over the years through canalization (such as in the downtowns of Attleboro and North Attleborough), pavement,

buildings, and dams so that its physical characteristics now differ significantly from its natural state. These physical alterations have created several open-water impoundments, increased flooding events, and disturbed the river's ability to support wildlife such as the historic anadromous fish run.

Objective 3.1: Reduce flooding events in Attleboro and North Attleborough

This objective reflects the need to examine and possibly modify the river's physical attributes in order to minimize undesired and costly flooding events while still protecting river habitats.

Objective 3.2: Create physical characteristics to fully support aquatic life

The 1997 Water Quality Assessment Report (DEP) reports that only 3.0 river miles (of the 27.9 assessed) fully support a native, naturally diverse community of aquatic flora and fauna. The report frequently mentions physical characteristics[1] that affect aquatic and wetland wildlife habitat as the factor limiting the river's ability to fully support aquatic life — characteristics such as low flow, siltation, habitat alteration, and loss of riparian buffers.

For example, the Ten Mile River once supported anadromous fish, notably alewife, blue-back herring, eel and American shad. At present, however, these species cannot enter the Ten Mile River to spawn because dams and other barriers obstruct their migration upstream, starting with Omega Pond dam at the mouth of the river in Rhode Island. Many of these dams date to the Industrial Revolution. Fish currently can only enter the Ten Mile River as a result of annual Fish Lifts coordinated by the Slater Mill Fishing Club. Removal or mitigation of these barriers will be necessary to restore anadromous species to the river.

Goal #4: Reduce Negative Impacts of Growth on the Watershed's Environment

The cities and towns in the Ten Mile River Watershed, located in one of the fastest-growing regions of New England, have experienced rapid development in the past few years. New development — new homes, shopping areas, and industries — can bring economic benefits to the cities and towns of the watershed. It also can bring harm to natural resources and the economic burden of providing additional services. The goal is to promote targeted economic development that efficiently utilizes existing infrastructure while minimizing use of undeveloped woodlands and agricultural lands — lands that help define the character of these communities and help protect water quality. This type of managed growth requires creative and forward-thinking local land use planning, coordinated regional planning, and the application of new rules and tools.

The authority to direct land use exists primarily at the local level, so municipalities direct growth planning in the watershed. Due to this emphasis on local authority, there is no direct role for the EOEA Watershed Team in land use planning other than through our municipal team members.

There is value, however, to looking at growth issues regionally. In open space planning (see Goal #5), the watershed has seen implementation of an innovative regional planning effort. The Regional Open Space Plan was facilitated by the Watershed Team, but developed by a Regional Open Space Committee with membership from all the primary municipalities. The Watershed Team may be able to take a similar facilitative role in regional growth planning, especially planning for an adequate drinking water supply. In addition, the Watershed Team can play an important overall role in encouraging, educating, and supporting municipalities as they seek to direct growth in a manner beneficial to the communities and to natural resources.

Objective 4.1: Continue coordinating local land use planning and implementation to ensure protection of watershed resources

Local land use planning, and the implementation of these plans, is critical to protecting specific resources, such as land that has been farmed for generations, a forest well-used by area residents, or the habitat for a diverse

[1] The report also mentions toxicity of the water column and sediments as a limiting factor for habitat.

range of plants and animals. It is also critical to the protection of water quality more generally, by ensuring good construction practices, erosion control, and proper drainage infrastructure. Our objective is to promote, coordinate, and implement land use plans.

Objective 4.2: Continue regional land use planning and implementation to ensure protection of watershed resources and environment

Regional land use planning — joining and coordinating all the various local land use planning efforts — is key to ensuring sensible growth and efficiency. It may promote efficient sharing of resources or avoid situations where one town's efforts are superceded or counteracted by another's.

This is exemplified by the joint efforts of the Towns of Plainville and North Attleborough to construct a water treatment plant and to plan for the managed growth of the west side of both communities.

Objective 4.3: Plan for adequate water supply to meet growth in demand

As more businesses and residents come to the watershed's cities and towns, water demand increases and recharge of the groundwater supplies decreases. Increased well withdrawal can have negative implications for flow and habitat. Both in individual cities and towns and on a watershed-wide basis, it is becoming increasingly important to anticipate, shape, and plan for future water supply needs. According to DEP's Water Management Act files, there are over 45 water withdrawal sources presently within the watershed. In addition there are interbasin transfers of water both into and out of the watershed. The team is committed to working with the local municipalities and public water suppliers to protect the existing sources of drinking water and plan for the future needs of the communities including utilizing appropriate conservation measures. (See Appendix A "Major Permits" for more information.)

Objective 4.4: Promote viable and sustainable agriculture

Working farms can be an economic, aesthetic, and environmental attribute to a community, lending a town a desired rural character and attractive open space. Retention of working farms is also an effective means for controlling development and minimizing land conversion. Communities can take actions to protect working farms and extend the economic viability of local farming enterprises.

Objective 4.5: Redevelop abandoned and underutilized properties

Focusing development in downtown areas helps create thriving cities and towns with interesting and lively downtown areas, reduces the air and water pollution associated with vehicle travel by encouraging people to walk, and preserves undeveloped places elsewhere in the community. Cleaning up contaminated lands in urban areas has even more benefits, including preventing additional contamination of runoff, allowing for safe and productive re-use, and providing for more public access to waterfront areas. For example, abandoned mills or industrial sites along the Ten Mile River could be redeveloped for a variety of uses to create a more attractive and productive waterfront region. The removal of the Balfour factory in downtown Attleboro to create the Balfour River Walk is an example of such an activity.

Goal #5: Implement the Regional Open Space Plan

Special efforts must be made to protect special areas, such as the rare Atlantic White Cedar Swamp in the Bungay's watershed, the vernal pools that can be found throughout the watershed, and areas along the river that can serve as hiking or walking trails. Priorities in this area include protecting important natural areas and biodiversity, protecting the surface water supplies along the Seven Mile River, and increasing opportunities for recreational activities such as biking, hiking, and canoeing.

Objective 5.1: Preserve open space and unique wildlife areas

The Ten Mile River Watershed Team and SRPEDD have facilitated development of a recently-completed Regional Open Space Plan. The Plan, which was developed by a committee with representatives from across the watershed, prioritizes lands for preservation. The next step for the committee will be implementation of the plan,

which involves a new set of challenges: How to get funds to protect lands? How to use various tools for open space preservation? The Team is committed to working with the Regional Open Space Committee by funding a greenway coordinator to answer questions such as these and begin the long task of implementing the vision articulated in the Regional Open Space Plan of 2000. This objective will also involve inventorying critical habitat areas and developing strategies for protecting these areas.

Objective 5.2: Provide for regional recreation opportunities

This objective includes expanding and promoting the opportunities for passive recreation such as hiking, horseback riding, bicycling, and canoeing along the Ten Mile River and throughout the watershed. This has dual benefits: First, there will be more recreational enjoyment for area residents. Second, as recreational use increases, there inevitably will be more awareness and appreciation for the rivers and ponds and their benefits.

3. Recommended Actions

Described below are individual, concrete actions to be taken toward each objective described above. They are presented in no particular order; all of these actions are equally considered priorities. For more information on responsible parties, funding sources, and timelines for these actions, see the Action Plan Matrix in Chapter 6.

Goal #1: Restore and Promote the Water Quality of Rivers and Ponds

Objective 1.1: Identify and minimize point sources of pollution throughout the watershed
Proposed actions for the next five years:

1.1.1 Design and construct sewering for priority areas in Attleboro and North Attleborough, as well as any necessary treatment plant upgrades.

1.1.2 Implement monitoring recommendations of DEP's 1997 Water Quality Assessment of the Ten Mile River, including:

- Conduct more intensive (diurnal) dissolved oxygen (DO) monitoring in the upper 4.3 miles of the lower Ten Mile to delineate the spatial extent of Class B water quality standards violations. Also additional DO monitoring in the river downstream of Hebronville Pond.
- Establish biomonitoring stations immediately upstream and downstream of the Attleboro wastewater treatment plant discharge. Use of artificial substrates for macroinvertebrate sampling may be required due to habitat constraints.
- Conduct shoreline surveys/field reconnaissance along the Bungay and Seven Mile Rivers. Identify any point source discharges that may be affecting instream water quality in the river. An intensive instream survey of dissolved oxygen (increased spatial and temporal coverage) is necessary to evaluate the effects of the NPDES discharges or other potential sources of nutrient enrichment to the Bungay River. Also identify nonpoint source discharges as part of the shoreline survey (see Objective 1.2).
- Create a sampling plan for the Bungay River. Consider the need for nutrient sampling, fish population and/or benthic macroinvertebrate sampling.

1.1.3 Reissue minor NPDES permits, including:

- MAG250958 for Mantrose-Haeuser Co., Inc. once the new general non-contact cooling water (NCCW) permit is available.
- Fortifiber Corporation. Give particular attention to heat, metals and other contaminants as well as toxicity. Hours of operation/discharge should also be considered in the development of the permit limits.
- North Attleborough National Fish Hatchery, with appropriate permit limits for conventional and toxic pollutants. Specific recommendations were made in a memorandum for the record written in response to a request from the U.S. Fish and Wildlife Service requesting clearance for the use and discharge of formalin at the Fish Hatchery (see DEP Water Quality Assessment for specific recommendations).
- Bristol Nursing Home, with revisions as detailed in DEP Water Quality Assessment.
- Screening of NCCW discharges to lower Ten Mile River for acute toxicity in facilities' permits as part of NCCW permit reissuance.

Actions already planned or underway by Team members and partners:

1.1.4 Support enforcement and remediation efforts in Plainville with respect to heavy industry in TMR headwaters.

1.1.5 Ensure all major NPDES permits are current and in compliance.

1.1.6 Complete and re-issue permits for all minor NPDES sources in the watershed.

1.1.7 Complete the infiltration & inflow (I/I) reduction project to remove extraneous flows from the North Attleborough wastewater treatment plant. Studies completed for North Attleborough by Whitman & Howard, Inc. divided the sewer system into 17 smaller areas and evaluated and prioritized each of these “mini-systems” vis a vis the I/I problem. North Attleborough has already completed $1.2 million worth of I/I work using SRF funding, and anticipates doing another $3 million worth over the next five years.

The town has its own sewer camera truck to locate leaking sewer pipes; the SRF would go towards engineering, construction, and inspection of work to repair/replace I/I issues.

1.1.8 Complete system upgrades to the North Attleborough Sewage Treatment Plant. The plant was built to last until 2000 and is now operating beyond its expected service life. The Town of North Attleborough has funded several equipment replacement projects, which are listed in the Municipal Infrastructure Report.

1.1.9 Construct recommended high priority sewers as identified in Attleboro Comprehensive Wastewater Management Plan (CWMP).

1.1.10 Implement North Attleborough CWMP. North Attleborough completed a CWMP in mid-1999. This comprehensive study ranks the needs of the different unsewered areas of town. Total cost to complete all of the areas is estimated at $47 million. In order to implement the plan, $2,625,000 needs to be budgeted annually to complete the CWMP's recommendations.

1.1.11 Comply with Stormwater Phase II regulations in Attleboro, North Attleborough, and Seekonk. Primary responsibility for obtaining Phase II NPDES stormwater permits and developing storm water plans will be with the municipal governments of Attleboro, North Attleborough, and Seekonk (North Attleborough has already received a State Revolving Fund (SRF) grant for Phase II implementation). Primary responsibility for ensuring compliance with program requirements will be with EPA and DEP.

1.1.12 Require the North Attleborough wastewater treatment plant (WWTP) to continue toxicity testing using *C. dubia* and to initiate a toxicity identification and reduction evaluation (TIE/TRE). An upstream/downstream evaluation of the WWTP discharge revealed impacts to the benthic macroinvertebrate community. While fish populations upstream of the discharge were considered impacted in past DEP sampling, the reach sampled downstream of the discharge was devoid of fish at the time of sampling. Past whole effluent toxicity testing results indicate sporadic acute and chronic toxicity to *C. dubia*.

1.1.13 Investigate compliance with stormwater performance standards/best management practices (BMPs) and issue stormwater permits as required for sand and gravel mining operations including immediately upstream of Tiffany Street in Attleboro and upstream of Fuller Pond in Plainville. Investigate sediment inputs to the TMR.

Objective 1.2: Identify and minimize nonpoint sources of pollution to rivers

Proposed actions for the next five years:

1.2.1 Implement nonpoint source reduction recommendations in the forthcoming MWI FY01 nonpoint source assessment of the watershed and DEP's Ten Mile River Watershed Nonpoint Source Action Strategy (see Appendix K for a copy of the DEP strategy). Recommendations include:

- Partnering with the Mass Highway Department to address runoff from state roads.
- Investigate and remediate sources of sediment inputs in the on the upper Ten Mile river (DEP sampling sites TM02 and TM06). Sources include road crossings – in particular West Bacon St., and parking lot runoff. Other sediment sources in North Attleborough include little red schoolhouse (silt plume between Broad & Park Sts.).
- Investigate and remediate sources of sediment inputs to the lower Ten Mile. Sources include road runoff from Cedar and Freeman Streets. Sediment deposition compromises habitat quality in the vicinity of the North Attleborough WWTP.
- Minimize erosion along the streambank immediately downstream from Tiffany Street in Attleboro (along the cemetery property). Make improvements to the riparian zone (i.e. restoration of vegetative buffer) in the vicinity of the cemetery.
- Conduct site investigations to determine specific sources of sediment inputs along the TMR as it leaves the state of MA (DEP's TM14 sampling reach) and to determine if BMPs are needed. Road runoff originating from Central Ave. or adjacent parking lots may contribute to the sediment deposition observed throughout the sampling reach.

- Work in tandem with DEP's Regional Nonpoint Source Coordinator to educate watershed stakeholders and to facilitate Best Management Practices (BMPs) at the local level.
- Use DEP's Statewide Nonpoint Source Strategic Summary for identifying potential community funding resources.
- Make improvements to storm drainage and riparian buffer at Central Avenue DPW yard in Attleboro.

1.2.2 Conduct outreach to abutting landowners and other stakeholders as to the need to establish/implement a riparian buffer zone

1.2.3 Secure funding to cap the unlined landfill in Seekonk on Route 152 and transform the area into the first public park in Seekonk.

1.2.4 Identify nonpoint sources during shoreline survey/field reconnaissance along the Bungay River, as described in Action 1.1.2.

1.2.5 Develop TMDLs for priority river segments. MA DEP's TMDL plan calls for development of 50% of Category A TMDLs and 25% of Category B TMDLs statewide in 2004. (Category A TMDLs are those for which DEP considers technical methods well-developed, while for Category B, technical methods need further development). (See Appendices C and D for complete lists of river segments and lakes and ponds in the watershed, including those on the Massachusetts 303(d) list of impaired water bodies).

1.2.6 Complete nonpoint source assessment for the entire watershed. The Watershed Team has already allocated funding and issued an RFP for this activity. Assessment will include identification of sources of silt plumes and recommendations for reducing silt plumes, roadway and parking lot runoff.

1.2.7 Undertake Bungay River storm drain analysis and remediation.

Objective 1.3: Identify and minimize nonpoint sources of pollution to lakes and ponds

Proposed actions for the next five years:

1.3.1 Complete assessment of 14 of the 36 lakes and ponds in the watershed. Some level of assessment has already been completed for the remaining 22 impoundments (see Appendix D for a list of lakes and ponds). Baseline surveys of Dodgeville, Farmers, Mechanics, Falls, and Whitings Ponds have been completed. Evaluate the need for further study of these ponds, and prioritize recommendations of the completed studies for implementation, such as lake watershed surveys and development of lake management plans.

1.3.2 Propose and implement Lake Como improvements recommended in the ACOE report. Connect all Lake Como residences to sewers. North Attleborough is seeking SRF funding for this action. Also pursue sewer connections for other priority areas, including near Whiting's Pond.

1.3.3 Reduce phosphorous loading to Whiting’s Pond. The North Attleborough Conservation Commission would like to develop various alternatives to reduce the amount of phosphorous entering Whiting’s Pond. The Commission lacks funds to design, permit, and perform the work associated with recommendations of their comprehensive analysis. According to the North Attleborough Community Action Statement, the Commission will seek funds for this work.

1.3.4 As a means of reducing bacterial contamination, Investigate possibilities for municipal ordinances to limit or prohibit feeding of waterfowl, as recently implemented in North Attleborough.

Actions already planned or underway by Team members and partners:

1.3.5 Review width of Riverfront Zone in downtown Attleboro Business District.

1.3.6 Review width of Riverfront Zone in downtown North Attleborough/Route 1 area.

1.3.7 Complete Blackinton Pond restoration, including silt removal, repair of retaining wall, historic landscape restoration and storm drain improvements of Action 1.2.7

1.3.8 Sewering at the Lyndsay Acres residential area around Greenwood (Bungay) Lake in North Attleborough.

Objective 1.4: Remediate and prevent the spread of invasive species

Proposed actions for the next five years:

1.4.1 Manage the isolated populations of non-native aquatic or wetland species in identified locations. Species of concern include: Green cabomba (*Cabomba caroliniana*), Variable milfoil (*Myriophyllum heterophyllum*), Eurasian water milfoil (*Myriophyllum spicatum*), Purple loosestrife (*Lythrum salicaria),* and Common reed (*Phragmites australis*).

- Prioritize locations of concern.
- Conduct more extensive surveys, particularly downstream from recorded locations, to determine the extent of infestation. Make invasive species surveys part of the shoreline surveys proposed in Action 1.1.2.
- Implement "spot" treatments to control populations before they spread further. Treatments may include hand pulling individual plants in small areas or selective herbicide applications in larger areas.

1.4.2 Work with state and municipal agencies to reduce planting of invasive species of concern in landscaping on public property, in order to minimize impact and set an example for residents.

Goal #2: Build a Sense of Stewardship within the Community.

Objective 2.1: Build the TMRW Team

Proposed actions for the next five years:

2.1.1 Publish quarterly articles in the following publications: Ten Mile River Watershed Alliance newsletter, Attleboro Sun Chronicle, North Attleborough Free Press, Providence Journal, My Backyard. Also keep current the calendar of upcoming environmental activities in the watershed on the web pages of the EOEA Watershed Team, Ten Mile River Watershed Alliance, and Save the Bay.

2.1.2 Increase Team membership by encouraging participation from other organizations such as Save the Bay and businesses.

2.1.3 Develop a mission statement and clarify the roles and responsibilities of Team members.

Actions already planned or underway by Team members and partners:

2.1.4 Continue to provide technical assistance and training to municipalities as requested.

2.1.5 Continue to notify local municipalities and environmental groups of available state funding, review local grant applications, and provide letters of support for grants.

2.1.6 Modify GIS maps for consistency across Massachusetts/Rhode Island border. Utilize high-quality digitized GIS data available from certain municipalities.

2.1.7 Implement an interstate watershed restoration grant program for watershed organizations and municipalities to improve rivers and coastal areas in the greater Narragansett Bay watershed.

2.1.8 Delay the basin cycle in the Ten Mile River watershed two years to coincide with the Narragansett Bay basin cycle in 2003, to allow for better coordination across the two watershed teams. The timeline of the matrix in Chapter 6 of this plan reflects this delayed basin cycle.

2.1.9 Partner with the Narragansett Bay Estuary Program – maintain regular communications to ensure the Team's actions are consistent with estuary objectives. Actively participate in the Partnership for Narragansett Bay and its Action Plan update.

Objective 2.2: Strengthen regional and local watershed advocacy groups and activities

Proposed actions for the next five years:

2.2.1 Strengthen coordination between existing groups. Sponsor at least one joint event per year. Increase coordination among local cleanup efforts. Groups that could coordinate include: EOEA Team; Mass. Audubon; TMRWA; Boy Scouts; local land trusts, conservation commissions, and historic commissions.

2.2.2 Coordinate advertising of environmental events watershed-wide.

Actions already planned or underway by Team members and partners:

2.2.3 Complete the shoreline survey and continue water quality monitoring for Coles Brook in Seekonk, in conjunction with development of Source Water Protection Plan for Seekonk. Team allocated funds for Stream Teams in FY01 and received DEP grant money.

2.2.4 Continue to clear debris from various segments at yearly cleanups sponsored by local citizens' groups. Lead or participating organizations include TMRWA, North Attleborough Conservation Commission, and Plainville Boy Scouts.

2.2.5 Establish funding for at least one staff member for TMRWA through appropriate funding sources.

Objective 2.3: Promote environmental education and awareness in the community

Proposed actions for the next five years:

2.3.1 Require all grants supported by the EOEA TMRW Team to include a public information or public education component.

2.3.2 Conduct at least one public forum per year on an issue of importance to the watershed. Potential forum topics include:

- detrimental effects (nutrient enrichment, bacterial contamination) of feeding wild and domestic waterfowl. Focus particularly on the Blackinton Pond area.
- nonpoint source pollution. Focus on the Seven Mile River and Fourmile River sub-watersheds. This is critical because the considerable residential development and a number of horse corrals within the floodplain of the river present risks of nonpoint source contamination.
- Also, residents should be discouraged from clearing woody debris in an attempt to reduce flooding, because the debris provides wildlife habitat.

2.3.3 Increase use of technology: Put TMRWA slide show on CD. Start a web ring to link Web sites related to the Ten Mile River Watershed.

2.3.4 Increase outreach to schools, colleges, and universities and work with teachers. Work with MA Audubon, Save the Bay, and other local/regional organizations to give students a positive role in the watershed. Bring the issues to the schools. Provide a point of contact on the EOEA Watershed Team for schools. Promote and support applications by teachers for EOEA Outdoor Classroom Grants and other educational grants.

Actions already planned or underway by Team members and partners:

2.3.5 Continue to provide education in:

- vernal pool certification
- growth management/land use
- the river's natural history
- water conservation
- eco-friendly lawn care and pesticides, and household hazardous waste
- habitat preservation

Hold or promote at least thirty public education events in the watershed.

2.3.6 Enhance and distribute watershed guide and heritage trail brochure.

2.3.7 Outreach Map of the Watershed Action Plan. Will synthesize plan in a readily understandable two-sided poster. Team allocated $10,000 in FY02.

2.3.8 Design and implement a Watershed Team annual recognition award. Choose one category each year in which to provide an award to an innovative municipal, state or citizen effort. Potential categories include growth planning, open space preservation, water supply planning, stewardship, and water quality improvement.

Goal #3: Improve the River's Physical Characteristics and Functions

Objective 3.1: Reduce flooding events in Attleboro and North Attleborough

Proposed actions for the next five years:

3.1.1 The study completed by the Office of Dam Safety in 2000 included inspecting dams, ranking them by hazard level, and making recommendations for each dam. Consider the recommendations of the study and prioritize them for implementation. Involve TMRWA in this process. See Appendix E for a full list of the dam study recommendations.

3.1.2 Install and monitor stream gauges along the river to predict and indicate flooding. Includes one automated gauge and several staff gauges for manual reads. Cost: $20,000-25,000 to install (may be FEMA $ for that), $11,500/year maintenance.

Actions already planned or underway by Team members and partners:

3.1.3 Work with DPWs to implement best management practices to minimize flooding. In addition to routine maintenance, DPWs can clear debris from the river and clear out blocked culverts whenever there is a flood threat.

3.1.4 Finalize the Army Corps of Engineers dam study currently being undertaken in coordination with the Watershed Team. Consider implementation of the recommendations.

3.1.5 Finalize the Flood Warning Response Plan between Attleboro and North Attleborough.

3.1.6 Restoration of wetlands along Route 1 in North Attleborough.

3.1.7 Improve flood control capacity at Falls and Whitings Ponds.

3.1.8 Replace temporary bridge and damaged culvert on County St. Current temporary arrangement is trapping debris and contributing to flooding.

3.1.9 Evaluate benefit to Town of Plainville in accepting gift of land at Wetherell's Pond, work with other partners to repair dam, earthen berm and secondary bypass stream.

Objective 3.2: Create physical characteristics to fully support aquatic life

Proposed actions for the next five years:

3.2.1 As part of shoreline surveys (see above), measure flow conditions, with possible follow-up monitoring in the following areas of suspected low flow:
- in Coles Brook (including effects of water withdrawals in the upper watershed)
- at headwaters

3.2.2 Conduct aquatic habitat studies of the Bungay and Seven Mile Rivers.

Actions already planned or underway by Team members and partners:

3.2.3 Conduct 5-year reviews of all WMA permits.
- Note that Mantrose-Haeuser Co., Inc. permit requires 89% return of water to the TMR which may not be being met, according to DEP records. If necessary, the facility should meter the NCCW discharges

3.2.4 Monitor well development by the towns of Mansfield and Foxborough for new wells in the upper Bungay River Watershed (Witch Pond Swamp area).Give careful consideration to identify and assess water elevation in Witch Pond Swamp, headwaters of Bungay and home to two rare species, water uses/needs for flow since withdrawals transport water out of the basin.

3.2.5 Continuation of Save the Bay effort on fish ladders, dam breaches. This includes construction of three fish ladders in designated locations.

Goal #4: Reduce Negative Impacts of Growth on the Watershed's Environment

Objective 4.1: Continue coordinating local land use planning and implementation to ensure protection of watershed resources

Proposed actions for the next five years:

4.1.1 Encourage, educate, and support communities in taking actions in the following areas:
- Requiring stormwater Best Management Practices as described in the DEP Stormwater Management Handbook to be incorporated into subdivision and site plan review at Planning, Zoning, and Health Boards.
- Considering flood control impacts of proposed developments, including cumulative impacts of multiple projects in close proximity.
- Considering impacts of proposed developments on historical resources.
- Minimizing impervious surfaces through narrower roads, percentage impervious requirements for new developments, and consideration of impervious surface impacts in Site Plan Review.
- Having a single review of multi-phase plans for large parcels of land.
- Using tools such as conservation subdivisions, compact/flexible zoning, transfer of development rights, and site plan review to preserve open space.

4.1.2 Encourage implementation of *Executive Order 418: Assisting Communities in Addressing the Housing Shortage* in watershed communities. Executive Order 418, issued in January 2000, provides technical assistance and resources to communities to cities and towns to create Community Development Plans that target housing and commercial development, assess and/or improve transportation structure, and preserve open space. (see Appendix F for full text of Executive Order 418).

4.1.3 Encourage adaptive reuse of mills in ways that improve sites and are not detrimental to the river. For example, in North Attleborough the Planning Board wishes to promote adaptive reuse of mills along the Ten Mile River. This includes vacant mills adjacent to the downtown. Due to traffic and environmental concerns, their reuse for manufacturing may not be feasible. Zoning bylaw changes and special permit provisions now allow use of these structures for housing or other innovative uses. Continue efforts along these lines in North Attleborough and other communities.

4.1.4 Support redevelopment of urban sites through information programs, "brownfields" funding. Encourage re-use of old industrial buildings and under utilized sites in Attleboro for housing and commercial uses as appropriate. Establish adequate riparian buffer in the reuse of the Lamb Street site and redevelopment of other city controlled parcels.

4.1.5 Refurbish Blackinton Pond Historic District as the gateway to Downtown Attleboro. Planned for FY2002-2004.

Actions already planned or underway by Team members and partners:

4.1.6 Implement the following tool to minimize impact of development on environment: In their CWMP, the Town of North Attleborough prioritized unsewered areas of town for sewering, based on environmental and health risks. In recognition that development may occur in areas that are not top priority for sewering, the Town will require development proponents to be responsible for all design and analysis costs of new sewers in these areas.

4.1.7 Update City of Attleboro Open Space and Recreation Plan. Planned FY2000.

4.1.8 Update Town of Plainville Open Space and Recreation Plan. Planned FY2000.

4.1.9 Update or rewrite City of Attleboro Comprehensive Plan. Currently underway.

4.1.10 Continue downtown revitalization efforts in North Attleborough. The Town of North Attleborough will reinforce its downtown as a center of economic activity. The town has developed a downtown revitalization partnership program.

4.1.11 Recruit a representative from the state Department of Housing and Community Development as a watershed team member to provide technical assistance for on-going and planned downtown revitalization projects.

Objective 4.2: Continue regional land use planning and implementation to ensure protection of watershed resources and environment

Proposed actions for the next five years:

4.2.1 Encourage, educate, and support communities in taking actions in the following areas:
- Regionally consistent zoning, land use and conservation strategies and regulations. Support activities may include creation of model zoning regulations to support regional and local growth management objectives.
- Review and evaluation, and possibly local application, of the "tools' developed for zoning and conservation for the Regional Open Space Plan.
- Review and evaluation of the EOEA Build-Out Studies in order to determine how and where certain zoning and conservation tools may be applied on a regional basis.

4.2.2 Support *Executive Order 385: Planning for Growth.* EO 385 calls for all state agencies to consider the effects of their permitting and grants practices with regard to sustainable development and environmental impacts. Municipalities will also have to take EO 385 into consideration in applying for state funding for local projects. See Appendix G for full text of Executive Order 385. Specific aspects of implementation include:
- Taking into consideration local and regional growth management plans in affected municipalities
- Promoting revitalization of previously developed areas.
- Developing regional plans for infrastructure such as water supply and wastewater treatment.

4.2.3 Encourage creation of Priority Development Areas within each community that are well served by infrastructure and provide incentives to focus development in those areas, as a complement to the open space preservation priority areas recognized by the Regional Open Space Committee. Prioritize state and local infrastructure funding toward those areas.

4.2.4 Continue regional coordination through Vision 2020 and the Mayflower Compact.

Objective 4.3: Plan for adequate water supply to meet growth in demand

Proposed actions for the next five years:

4.3.1 Encourage, educate, and support communities in taking actions in the following areas:
- Source water protection for drinking water supplies, including zoning bylaws, ensuring that local regulations are consistent with Title 5, and pursuing land purchase within groundwater or surface water recharge areas.
- Limiting the impacts of growth on water supply by requiring the installation of water-saving devices and use of wastewater recycling in new development.

4.3.2 Evaluate and prioritize for implementation the recommendations of the Comprehensive Water Supply Plan, including:
- Looking into interbasin transfer issues when they arise.

4.3.3 City of Attleboro work with Mass. Highway and/or SRPEDD to determine how to minimize the contamination risk from any traffic accidents that occur on Routes 95 and 290 where they border the Manchester Reservoir.

4.3.4 Recognize communities' water supply planning efforts through through the Watershed Team's annual awards program (see 4.1.6).

Actions already planned or underway by Team members and partners:

4.3.5 Complete Comprehensive Water Supply Plan, Phase 1. Team allocated funding in FY01.

4.3.6 Phase II of Comprehensive Water Supply Plan: Assessment of information gathered in Phase I. Team allocated $40,000 in FY02.

4.3.7 Complete construction of a two-town water treatment plant for water from contaminated and impacted wells. Scheduled to come on-line in November 2001.

4.3.8 Tie in the Brown Avenue Wellfield to the new drinking water treatment plant in Seekonk.

4.3.9 Forestry Management for Public Water Supplies. Prepare a minimum of two Forest Management Plans for the publicly owned water supply lands in Attleboro and North Attleborough, as described in FY02 Work plan. $11,800 have been allocated for this project as part of the MWI Roundtable in FY02.

4.3.10 Rehabilitate Brown Avenue Wellfield in Seekonk.

Goal #5: Implement the Regional Open Space Plan

Objective 5.1: Protect regionally significant open space, unique wildlife areas, working landscapes, and water supply recharge areas.

Proposed actions for the next five years:

5.1.1 Support municipal and intermunicipal land preservation and acquisition projects where consistent with the Regional Open Space Plan. See Appendix H for a map of the priority areas identified in the Regional Open Space Plan.

5.1.2 Review and prioritize for implementation the recommendations of the Wetlands Restoration Plan for the Ten Mile River Watershed once the plan is completed.

5.1.3 Encourage, educate, and support communities in taking actions in the following areas:

- Creating strong local wetlands bylaws
- Preserving large tracts of land
- Preserving areas of historic and cultural significance
- Preserving intact riparian corridors
- Creating special protection overlay districts, particularly in riparian areas along the Bungay and Seven Mile Rivers.

5.1.4 Support at least one Self-Help Grant application per year.

5.1.5 Recognize communities' open space preservation efforts through the Watershed Team's annual awards program. (See 4.1.6)

5.1.6 Encourage promotion of agriculture through local zoning, taxation policy, state and federal expenditures, and public information. Provide business and estate planning advice for farmers. Increase the amount of working farmland under agricultural preservation restrictions.

5.1.7 Encourage the development and implementation of forestry management plans.

Actions already planned or underway by Team members and partners:

5.1.8 Create a permanent Regional Open Space Committee. Seek municipal commitments to appoint representatives to a permanent Regional Open Space Committee whose charge will be to link regional and local planning, where necessary and appropriate, and implement the Regional Open Space Plan in a manner complementary to local planning. Seek support and technical assistance from the Basin Team in terms of facilitation of meetings and assistance with procuring potential funding for further planning efforts.

5.1.9 Finalize and utilize a consistent prioritization and ranking methodology to create an inventory of land for acquisition throughout the region

5.1.10 Complete the Wetlands Restoration Plan for the Ten Mile River Watershed. (EOEA Wetlands Restoration Program)

5.1.11 Permit and construct Route 1 wetland restoration in North Attleborough. Team allocated funds for this in FY00 and FY02.

Objective 5.2: Develop multi-modal trail systems

Proposed actions for the next five years:

5.2.1 Plan for and develop regional “through trails,” such as the Ten Mile River Greenway trail. "Through trail" network should eventually include walking, biking, and canoeing access.

5.2.2 Develop spur trails to link the regional "through trails" system to existing trails such as the interstate Warner Trail (to which the Ten Mile River Greenway Trail could be connected through a spur trail in Plainville).

5.2.3 Increase trails and pedestrian-friendly development in individual municipalities. For example, the North Attleborough Conservation Commission would like to develop nature/hiking trails on several of its lands. It cites a lack of funds for trail design, marking, and publishing of these trails in the North

Attleborough Community Action Statement. The Commission will seek funds to implement these projects. the Historic Commission, the Open Space Committee, and the TMRWA are all working on trails and may coordinate to create a network of "CityWalks" with different themes such as cultural, historical, and environmental.

5.2.4 Provide canoe access on navigable water bodies by removing abandoned railroad trestles in Attleboro. Realign the sewer crossing above the mudline of the river at Lamb Street.

Actions already planned or underway by Team members and partners:

5.2.5 Open Space Implementation. Open Space Coordinator to work with Regional Open Space Committee on Regional Open Space Plan implementation. Includes work on trails, ranking of land for preservation. Team allocated $7500 for this in FY02.

5.2.6 Complete canoe access area and parking lot at Holden St. Expected completion spring/summer 2001.

4. Planning on a Sub-Watershed Level: Center for Watershed Protection's Rapid Watershed Planning Methods

The Impervious Cover Model

The planning subcommittee analyzed the major subwatersheds through a model that uses percent of impervious cover to recommend certain watershed management actions. This model approach is described in the "Rapid Watershed Planning Handbook" from the Center for Watershed Protection, published in 1998. The handbook was produced through a Cooperative Agreement with the U.S. Environmental Protection Agency as an adaptation of the National Urban Runoff Study undertaken by EPA in 1981. The percent of impervious cover in the main subwatersheds was determined using the Mass. GIS Watershed Tools that also was adapted from the EPA urban runoff study.

The Mass. GIS Watershed Tools describes surface runoff to streams and makes no accounting for such things as groundwater contributions to nutrient loads. Percentage of imperviousness is assigned to each of the twenty-one land use codes considered by Mass GIS in standard land use analysis. Values for imperviousness were originally based upon literature and were later revised based upon interpretation of half-meter ortho photos (for the imperviousness of the area under the land use polygons).

According to the model presented in Rapid Watershed Planning Handbook, there are certain points where stream quality changes and certain elements are lost from stream systems, based on the percentage of impervious surface within a watershed. Most notably, at above 10% impervious cover, sensitive stream elements are lost from the system and at 25-30% impervious cover stream quality indicators tend to shift into the poor category. These indicators include aquatic diversity, habitat quality and water quality. The model classifies streams into one of three categories - sensitive, impacted and non-supporting - each with unique characteristics. From these stream categories certain management recommendations can be identified based on an extensive review of existing studies. The recommendations also discuss a fourth category known as a restorable stream where there is sufficient potential to make a meaningful improvement in hydrologic regime and water quality, and "aquifer protection" for subwatersheds where surface water has a strong interaction with groundwater and where this groundwater is the drinking water source.

There are three main subwatersheds of the Ten Mile River, namely the Bungay River, the Seven Mile River and Coles Brook. For purposes of the impervious study, the mainstem of the river was segmented into three sections: the Upper, Middle, and Lower Ten Mile River. The impervious cover of the major sub-watersheds fall within a range of 2.9-15.7% imperviousness. This places them in the category of Sensitive (1-10% impervious) and Impacted Streams (11-25% impervious). These streams generally begin to show degradation due to urbanization, including altered stream geometry, declining physical stream habitat, water quality degradation and falling biodiversity. The planning subcommittee also recognized certain subwatersheds as restorable, namely the Bungay River, Seven Mile River and Coles Brook subwatersheds. The list of management objectives from the handbook were then reviewed in relation to the actions developed through the planning process to develop a complete set of actions to address the particular needs of each subwatershed.

Model Limitations

The estimates of nutrient loading and the analysis of impervious surface derived for a subwatershed through the Mass GIS watershed tool can provide valuable insights for future land use and mitigation planning; both "simple truths and profound clues" to quote Bill Napolitano of SRPEDD who assisted in the analysis.

Impervious cover calculations give one clue among many about the current state of the subwatershed in terms of development, hydrologic regime, runoff, and other water quality indicators. Water quality and quantity degradation is not limited to impervious cover, and depending on distribution and management practices, impervious cover can have a greater or lesser effect on water quality. It is important to look closely at the quality of the pervious areas as well for their storage and/or runoff capacity and general habitat or buffering capability.

For example, lawns and ballfields generally have a high chemical input and larger runoff coefficient than a meadow, forest, or stream buffer.

Other clues come from familiarity with the type and distribution of land uses in a subwatershed. For example, a watershed may have low impervious cover, but may suffer from water quality degradation due to nutrient input and/or bacteria from agriculture, farming, golf courses, or septic systems. In the Coles Brook subwatershed impervious cover is a low 2.9%, yet the brook does not meet water quality standards for bacteria during wet weather. Residential and recreational development can also have serious effects on the biological integrity and habitat quality of stream corridors.

The impervious area calculations used here were performed using coefficients for different land use categories and were based on land use allocation from MA GIS data. The Mass. GIS tool assumes no nonpoint source mitigation factors such as in-stream assimilation and no best management practices (BMP's) being put in place. Local zoning and non-zoning development standards can lower the amount of impervious cover in a watershed and how effectively the runoff is treated can lower the impact of impervious cover.

This model is best used on small subwatersheds no larger than 10 square miles for the first to third order streams. For this reason, the mainstem Ten Mile River has been divided into three subwatersheds (upper, middle and lower), but it may be influenced by specific pollution sources and land uses that dominate the water quality and dynamics of the river. It is important to look more closely at the urban corridors, downtown Attleboro for example, to see the stress that these highly impervious and past industrial areas have placed on the stream corridor.

As with any model this analysis only predicts average behavior of a group of stream indicators over a range of impervious covers. Obviously, ground-truthing of a subwatershed area that has undergone computer analysis will provide more accurate data and the basis for the most practicable mitigation alternatives. However, these basic estimates, in conjunction with other resources such as the Rapid Watershed Handbook and the familiarity of the planning subcommittee members with the area, can be used to devise effective strategies to help restore impaired waters and promote responsible land use planning to minimize detrimental impacts to the watershed. While growth in certain areas is inevitable and a reduction in corresponding impervious surface improbable, how we address the potential impacts of nonpoint sources of pollution in pre-development planning will be the key in maintaining or improving the relative health of our waterways and waterbodies.

Watershed Protection Tools

The Center for Watershed Protection outlines eight tools for watershed protection. These tools are applied in different ways depending on the subwatershed management category. The tools are:

1. Watershed Planning – developing land use patterns based on future land use change. Used to redirect development, preserve sensitive areas, or maintain and reduce impervious cover. Generally accomplished through zoning, urban growth boundaries or other planning tools.
2. Land Conservation – protecting critical habitats, corridors, recharge areas, historical areas or protecting against specific hazards to the water resources. Accomplished through land acquisition, conservation easements, setbacks, stewardship or developing greenways.
3. Aquatic Buffers – developing or maintaining a buffer network and determining restoration or stewardship goals for buffer areas.
4. Better Site Design – fostering better site designs at the development level. These strategies include cluster subdivisions, green parking lots, rooftop runoff management and changing zoning codes for limited street width.
5. Erosion and Sediment Control – developing practices to protect aquatic habitats, reduce sediment loads and maintain conservation areas and buffers.

6. Stormwater Best Management Practices – developing objectives for stormwater that will maintain groundwater recharge, reduce pollutant loads, protect stream channels, and prevent and mitigate flooding. This includes selecting BMPs and deciding what parameters to manage (flooding, pollution, etc.).
7. Non-Stormwater Discharges – including monitoring and inspecting septic systems, identifying and eliminating illicit connections, dealing with combined sewer overflows, NPDES permits and other runoff problems.
8. Watershed Stewardship Programs – promoting greater watershed stewardship by fostering public participation, advocacy, education and monitoring.

The Subwatersheds

The Ten Mile River Watershed is mostly flat with rounded hills and reaches a maximum elevation of about 430 feet above sea level. The River begins at Cargill Pond in Plainville at about 230 feet above sea level and flows about 61 miles through urbanized areas of North Attleborough, Attleboro and Seekonk before crossing into Rhode Island at an altitude of 75 feet above sea level. The river flows through many impoundments or is confined by retaining walls for much of its length.

There are three main subwatersheds of the Ten Mile River, namely the Bungay River, the Seven Mile River and Coles Brook. For purposes of the impervious study, the mainstem of the river was segmented into three sections: the Upper, Middle, and Lower Ten Mile River. See Appendix A for descriptions of the Major Permits and Appendices C & D for water quality standard identified in the subwatershed descriptions below.

Upper Ten Mile

Percent Impervious: 13.2%

Management Category: Impacted Stream

Description: The upper Ten Mile River extends from its origins to the confluence with the Bungay River. The Ten Mile River originates in Cargill Pond in Plainville and flows through a second small pond and an area that has been heavily mined for sand and gravel. The river then enters a forested wetland area before flowing through the industrialized area of West Bacon Street in Plainville, a recreational area behind Town Hall and into Wetherall's Pond, Whiting Pond, and an industrialized and commercial area of North Attleborough and the Falls Pond complex. The only named tributary is Scotts Brook. The watershed is primarily residential/industrialized and generally has been canalized downstream of West Bacon Street in Plainville.

The Upper Ten Mile does not meet the Class B water quality standards and is listed on the 303(d) list of degraded waters due from metals, nutrients and pathogens. North Attleborough and Plainville have water supply wells in the upper Ten Mile subwatershed. North Attleborough Wastewater Treatment Plan has a major NPDES discharge into this segment and there is at least one former NPDES minor permit in this subwatershed.

Actions: Managing the conditions of the headwaters is critical to restoring the water quality of the entire main stem. In this area, actions should focus on stormwater treatment at commercial and industrial operations as well as proposed residential subdivisions and remediation of other documented sources of nonpoint pollution. Document source of low flow conditions in both Scotts Brook and Rattlesnake Brook. Address restoration opportunities along the riparian corridor, wetlands, and the two impoundments in the headwaters known as Fuller Pond and Waterfall Pond.

Middle Ten Mile

Impervious Cover: 15.7%

Management Category: Impacted Stream

Description: The Middle Ten Mile River extends from the confluence with the Bungay River to the confluence with the Seven Mile River and includes the downtown business district of the City of Attleboro as well as the

Thatcher (Speedway) Brook tributary. The highly impervious downtown commercial/industrial/residential area with outlying forested and open space dominates this subwatershed.

Actions: Management objectives include improving the downtown area to alleviate pollutant loads and downstream flooding. Remediate nonpoint sources of pollution as they are identified. Developing brownfields, establishing greenways along the river and protecting the floodplain will all be of concern for this subwatershed. Team can maximize watershed stewardship and education efforts given the large number of people that have the opportunity to see and walk along the river in this area.

Lower Ten Mile

Impervious Cover: 12.1%

Management Category: Impacted Stream

Description: The Lower Ten Mile River extends from the confluence with the Seven Mile River to and along the shores of Central Pond and Turner Reservoir shores to the Massachusetts-Rhode Island state line. This subwatershed includes the forested headwaters of an unnamed tributary and the medium- to high-density residential districts of southern Attleboro and northern Seekonk. Coles Brook subwatershed joins the river system at Central Pond. The Zone of Contribution for some of the Seekonk water supply wells located in the Coles Brook subwatershed extend into this section of the Ten Mile.

Actions: Protecting the zone of contribution to the Town of Seekonk water supply is of concern in this subwatershed. Remediate nonpoint sources of pollution as they are identified. Slater Park offers opportunities to link walking and biking trails with the greater Narragansett Bay watershed that should be investigated.

Bungay River

Impervious Cover: 12.7%

Management Category: Impacted Stream but Restorable

Description: The 15 mile-long Bungay River originates in Witch Pond Swamp in Foxborough at about elevation 157 feet above sea level, and flows through Witch Pond in Mansfield and Greenwood (Bungay) Lake in North Attleborough. After passing through extensive wetlands, the Bungay River joins the Ten Mile River in downtown Attleboro just downstream of Blackinton (Simmons) Pond. According to the USGS, the Bungay River comprises about 14% of the land area in the Ten Mile River Basin. 11% of the basin population resides in this subwatershed with a population density of 1,075-people/square mile. Most of the residential density is located around Greenwood Lake and near the headwaters of the smaller tributaries. Interstate highway Route 95 bisects this subwatershed. Two minor NPDES permits discharge into the Bungay. This basin also supplies public water sources in the Witch Pond area for the Towns of Foxboro and Mansfield and lower in the basin to North Attleborough and formerly to the City of Attleboro. Two other North Attleborough users are registered to withdraw water from the basin. DEP approved wellhead protection Areas (Zone II) for the Foxboro and Mansfield wells indicate that some of the contributing area drains into the Wading River in the Taunton River watershed implying that the boundaries of the surface watershed and groundwater do not coincide.

The City of Attleboro, and to a lesser extent North Attleborough, has focused conservation efforts on preserving the extensive wetlands along the Bungay River that include unique and diverse natural resources. According to the DFW, there is a native brook trout population in the Bungay River and 2 rare plant and animal species within the Witch Pond Atlantic White Cedar Swamp.

Actions: The goal for this watershed is to continue the land protection efforts along the riparian corridor, enhance environmental education and recreational opportunities and to manage nonpoint sources of pollution in the headwaters and at Blackinton Pond near the confluence of Bungay with the Ten Mile mainstem. The conservation efforts of the City of Attleboro and Town of North Attleborough should be encouraged throughout the floodplains of the Bungay River. Fine canoeing opportunities exist along the Bungay and City of Attleboro is working with the state Public Access Board to provide a location for safe canoe access. Partners can assist this

effort and expand walking trails, possibly with interpretative stations, for citizen and school group environmental education opportunities. Management practices should focus on the headwaters that are particularly vulnerable to water withdrawals, stormwater management from the interstate highway and other arterial roads and septic management from densely developed residential areas. Blackinton Pond is located at the base of the Bungay River and forms a gateway from the north to the City of Attleboro downtown area. Restoration of Blackinton Pond, and stormwater treatment in its drainage area, is a priority to restore water quality and to enhance the community character of the adjacent historic district.

Seven Mile

Impervious Cover: 11%

Management Category: Impacted Stream but Restorable

Description: The Seven Mile River extends from Plainville through North Attleborough and enters the Ten Mile River in Attleboro near the Rhode Island-Massachusetts border. The primary source of drinking water for the City of Attleboro is from a complex of 4 reservoirs along the river. The City of Attleboro Water Treatment Plant is located at the most downstream reservoir, Orrs Pond. Manchester Reservoir, also part of the water supply system, is the largest lake in the Ten Mile River and flows through the Four Mile Brook prior to joining the Seven Mile River. This subwatershed comprises about (27)% of the land area in the Ten Mile River Basin and (14)% of the basin population reside in this area which is a population density of (694) people/square mile.

The upper reaches of the Seven Mile in Plainville and North Attleborough are still relatively undeveloped and include actively farmed areas protected under the Day's Agricultural Preservation Restriction Program or managed by the Conservation Commission. This same northern segment receives stormwater runoff from the densely developed commercial area along Route 1 in North Attleborough and Attleboro including the Emerald Square Mall (a NPDES major permit), and interstate highway Route 295.

The Seven Mile River and Four Mile Brook are designated as "Class A" waters, Outstanding Resource Waters since they are a source of public drinking water. The entire Seven Mile River does not meet water quality standards for pathogens, and is therefore listed on the state 303d list of impaired waters.

Actions: The goals for this subwatershed include meeting the Class A standard and restoring the water quality and habitat quality of the river corridor. The watershed overall has low impervious cover, with the impervious areas largely concentrated on the Route 1 corridor and in the southern watershed. Stormwater management practices have been in place for 12-13 years in the heavy commercial areas of Route 1, including the Emerald Square mall with a constructed wetland and other detention and settling basins.

Stormwater management will continue to be an important goal in this subwatershed as it comes under further development pressure from commercial and residential development. An emphasis should be put on conserving wetlands, riparian corridors and other recharge areas within the watershed, as well preserving the biological integrity of the stream system. Sources of bacterial contamination need to be identified, and the reservoirs need to be protected from septic system overflow and stormwater contamination. Priority areas for sewering should be identified in developed areas and areas with septic failure (such as Lake Como), but should not allow for increased development in sensitive areas. Development should be directed away from recharge zones and reservoirs and education about conservation and land use practices should be emphasized.

Coles Brook

Impervious Cover: 2.9%

Management Category: Sensitive Stream

Description: Coles Brook originates in Grassie Swamp in Rehoboth and flows through Seekonk's forested wetlands, a country club and a small residential area prior to joining the Ten Mile River in Central Pond. It is 4.3 miles long; drains 7% of the total basin area and about 2% of the basin population reside in this subwatershed. All of the Town of Seekonk water supply wells are located within the Coles Brook basin, and the

shallow aquifer is dominated by Coles Brook. During a near-record flooding event in June 1998, bacteria entered the Brown Avenue wellfield. The watershed team has made this subwatershed the focus of water quality assessment and shoreline surveys since 1999 to determine the source of elevated fecal coliform bacteria. Coles Brook is classified as Class B waters and is not listed as a degraded water on the 303(d) list. There are two Water Management Act registered withdrawals in the Coles Brook. The DEP Water Quality Assessment Report indicates the lack of flow impairs the aquatic life use in the Brook.

Actions: Goals for the Coles Brook subwatershed include maintaining the biological integrity of the surrounding wetlands and stream corridor, and monitoring the effects of water withdrawals on stream flow and habitat. Further monitoring is also needed to determine the sources of elevated fecal coliform contamination during wet weather. Education and conservation measures will be important focuses for this subwatershed, based on largely residential and recreational land use. Although the impervious surface levels are low in this area, land use practices on residential and agricultural property in combination with septic systems and the country club, have begun to degrade biological integrity and water quality in Coles Brook.

Because the Coles Brook watershed serves as a drinking water source for the Town of Seekonk, it will be important to protect recharge areas and to prevent stormwater from impacting well-head areas. Monitoring of water withdrawals and drawdown will be important before the reactivation of the Brown Avenue well field. Further development should be directed away from the sensitive recharge areas of this subwatershed.

5. Indicators of Watershed Status

The Watershed Team will track the following indicators over the next five years and into the future as a way of measuring the state of the watershed and progress from year to year. The first set of indicators, the "static indicators," do not change from year to year, but rather provide context and background for the other indicators, which will be tracked every 2 years to provide a trend over time.

Static indicators

- Number of total river/stream miles
- Number of lakes or impoundments
- Number of acres in the watershed

Water quality

- Number of river/stream miles assessed, and number of those found to be impaired
- Number of river/stream miles surveyed by volunteers
- Number of river/stream miles monitored by state agencies
- Number of shoreline surveys conducted by volunteers
- Number of lakes and ponds safe for swimming (see recreation section, below, for beach closings)

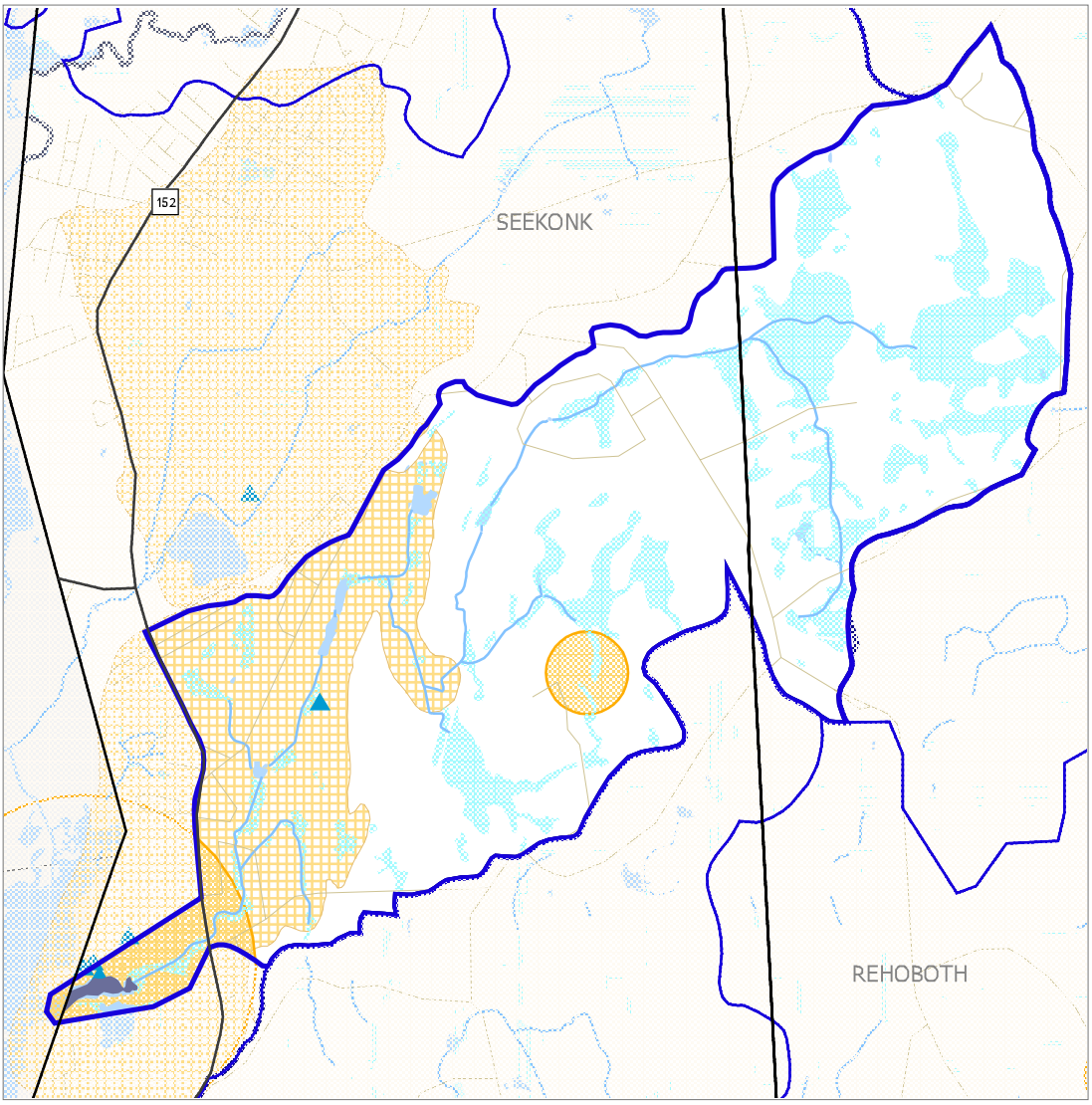
Habitat and biodiversity

- Number of species threatened or endangered
- Acres of wetlands restored
- Number of dams in the watershed, number of those in need of repair and number that provide fish passage
- Number of lakes/ponds with non-native invasive species
- Number of river miles identified with non-native invasive species
- Percentage of watershed that is protected open space
- Number of certified vernal pools

Land use and potential threats to water quality

- Number of landfills, and number of those uncapped and unlined
- Number of high threat operations to groundwater or surface water sources (from DEP SWAP)
- Number of permitted or registered water withdrawals greater than 100,000 gals.
- Number of interbasin transfers proposed, and number of those approved
- Percentage of impervious surface by subwatershed
- Number of hazardous waste sites (21E and Superfund)

Coles Brook Watershed



Water Resources

- Subbasin boundary
- Rivers and streams
  - Stream
  - Intermittent Stream
- Open water
- Wetland
- 303d-listed rivers and streams
- 303d-listed ponds and estuaries
- Public water supply
  - Surface water
  - Groundwater
  - Distribution reservoir
  - Proposed well
- Groundwater protection
  - Interim wellhead protection zone
  - Zone II
- Surface water protection
  - Zone A -- Active
  - Zone A -- Emergency
  - Zone B-- Active
  - Zone B-- Emergency
  - Zone C-- Active
  - Zone C-- Emergency
- Outstanding Resource Waters
  - Public Water Supply Contributor
  - Other ORW
- Ground water discharge site
  - Reclamation (Cleanup)
  - Sanitary Discharge
- Shellfish harvest
  - Prohibited
  - Restricted
- Anadromous fish presence
  - Dam with fishway
  - Dam without fishway
  - No dam
- Boat launch site
  - Concrete
  - Paved
- Town boundary

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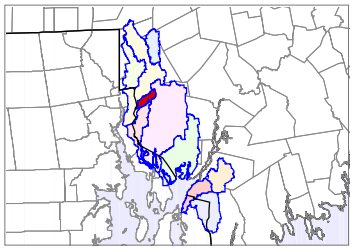
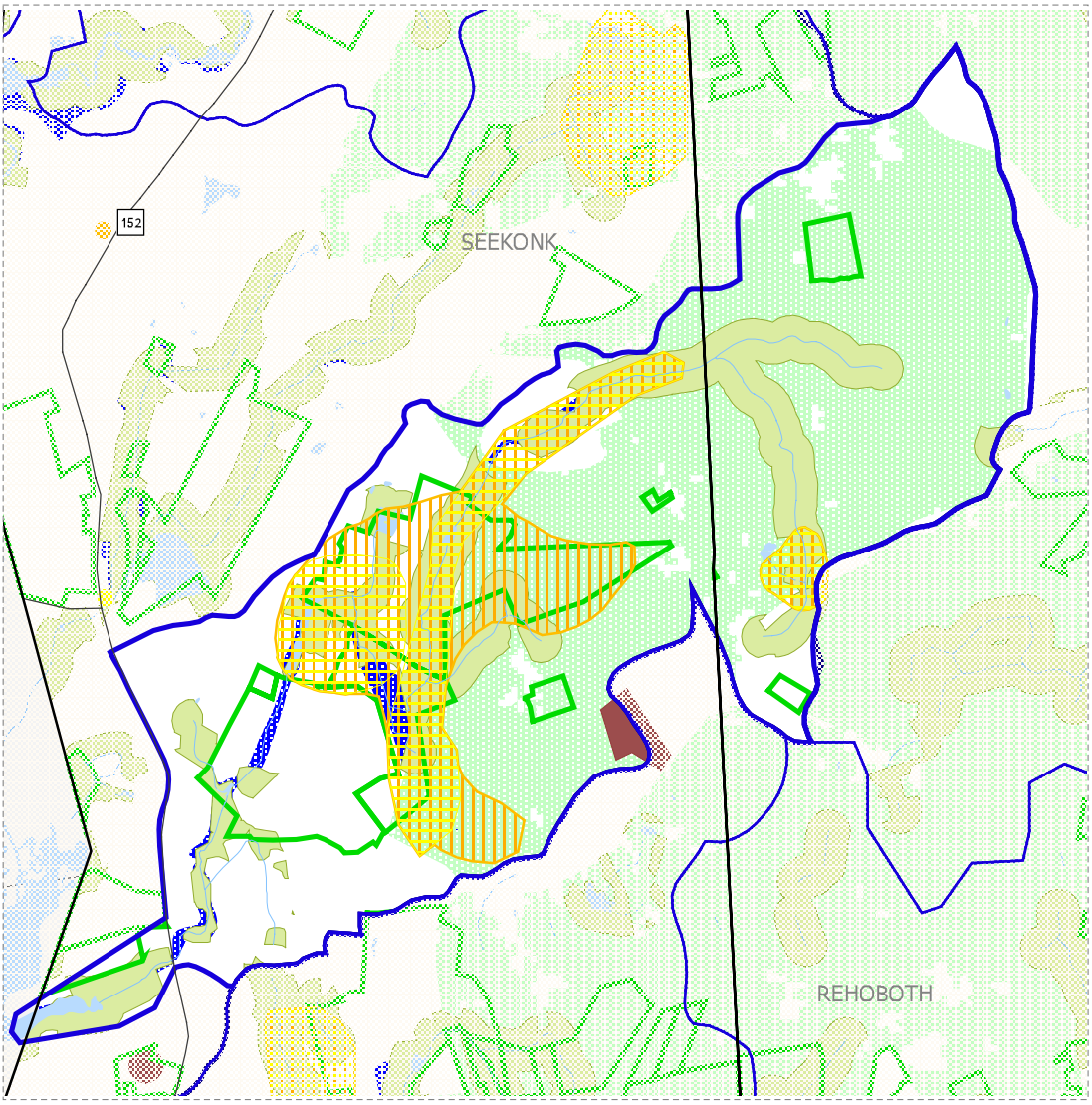


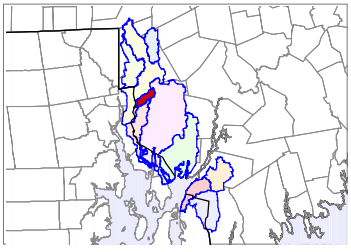
Andrea Langhauser
Ten Mile Watershed
Team Leader

Coles Brook Watershed



Land Resources

- Subbasin boundary
- Rivers and streams
  - Stream
  - Intermittent Stream
- Open water
- Contiguous natural lands
- Natural Heritage and Endangered Species Program
  - Priority habitat
  - Estimated habitat
  - Vernal pool
- Natural riparian corridor
- Protected openspace
- 21e sites
  - Tier 1A
  - Tier 1B
  - Default Tier 1B
  - Tier 1C
  - Tier 2
- Solid waste facility
- Floodplain
- Town boundary



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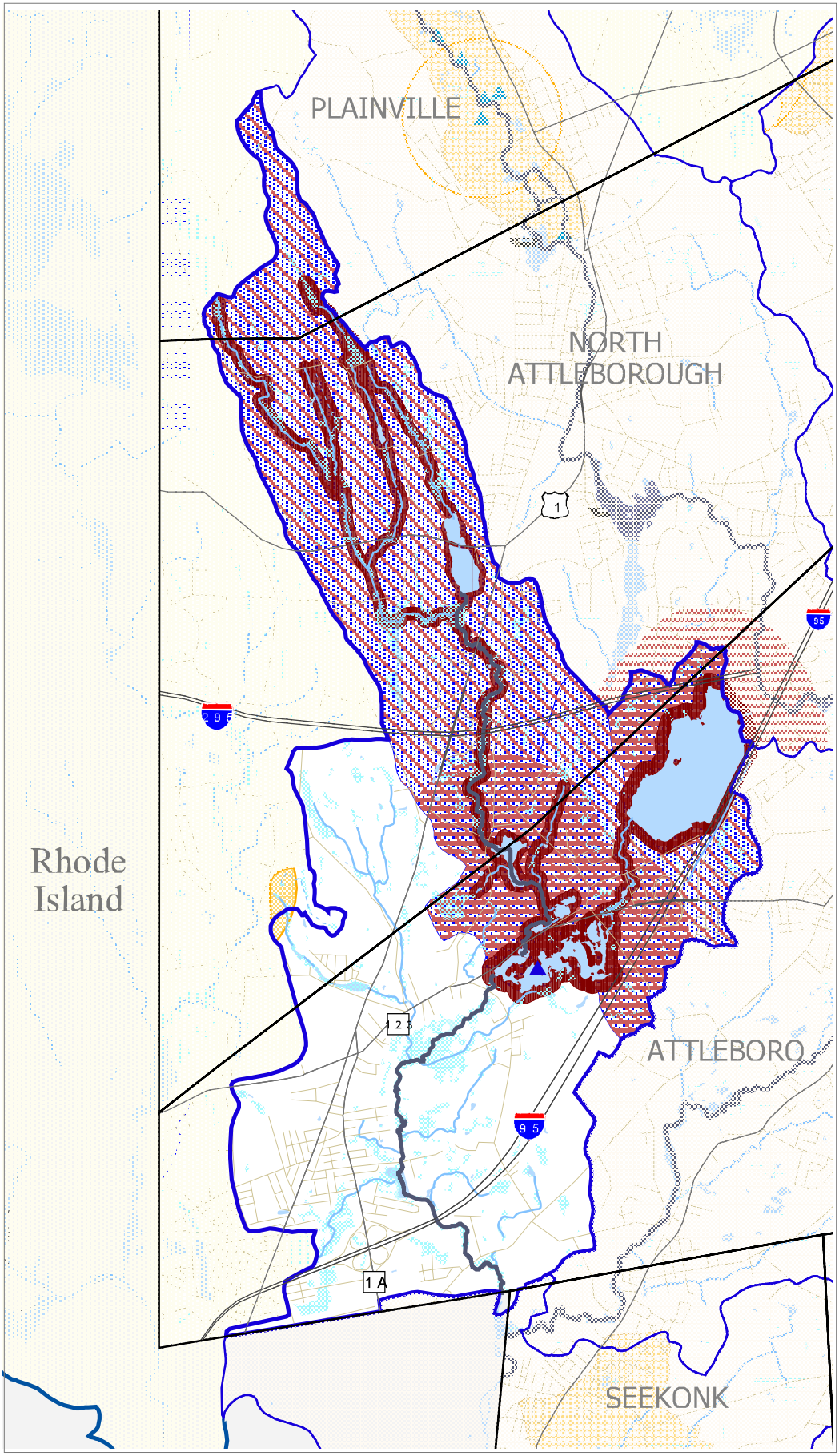
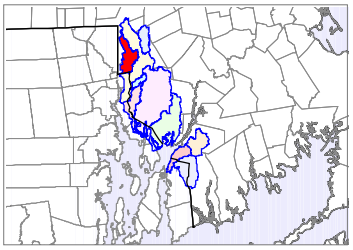
Andrea Langhauser
Ten Mile Watershed
Team Leader

Seven Mile River Watershed

Water Resources



- Subbasin boundary
- Rivers and streams
  - Stream
  - Intermittent Stream
  - Open water
  - Wetland
- 303d-listed rivers and streams
- 303d-listed ponds and estuaries
- Public water supply
  - Surface water
  - Groundwater
  - Distribution reservoir
  - Proposed well
- Groundwater protection
  - Interim wellhead protection zone
  - Zone II
- Surface water protection
  - Zone A -- Active
  - Zone A -- Emergency
  - Zone B-- Active
  - Zone B-- Emergency
  - Zone C-- Active
  - Zone C-- Emergency
- Outstanding Resource Waters
  - Public Water Supply Contributor
  - Other ORW
- Ground water discharge site
  - Reclamation (Cleanup)
  - Sanitary Discharge
- Shellfish harvest
  - Prohibited
  - Restricted
- Anadromous fish presence
  - Dam with fishway
  - Dam without fishway
  - No dam
- Boat launch site
  - Concrete
  - Paved
- Town boundary



Andrea Langhauser
Ten Mile Watershed Team Leader

EXECUTIVE OFFICE of ENVIRONMENTAL AFFAIRS

MASS GIS Massachusetts Geographic Information System
Massachusetts Executive Office of Environmental Affairs - 2001

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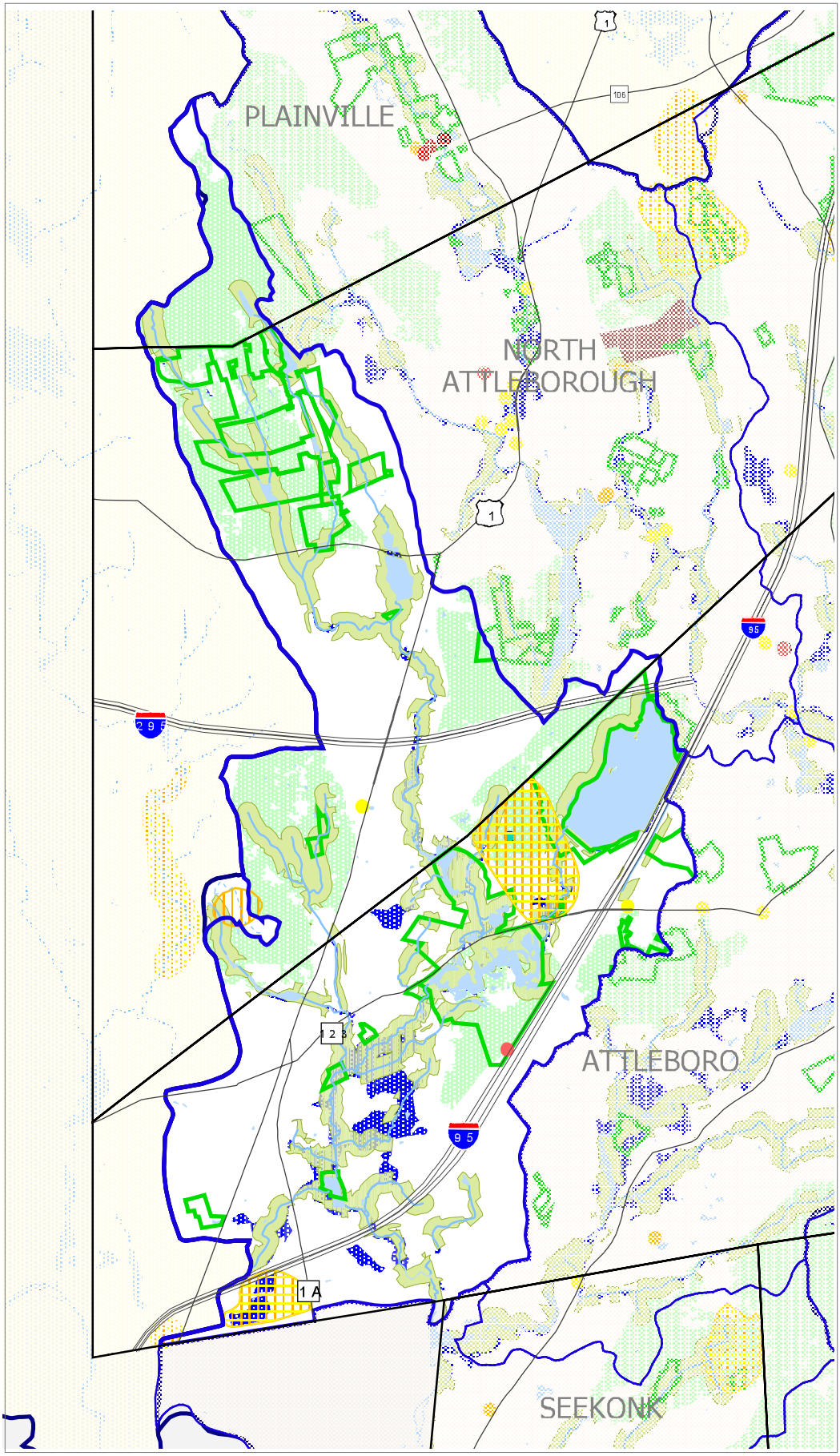
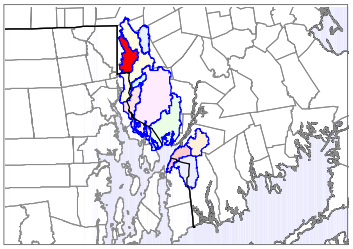
Seven Mile River Watershed

Land Resources



- Subbasin boundary
- Rivers and streams
  - Stream
  - Intermittent Stream
- Open water
- Contiguous natural lands
- Natural Heritage and Endangered Species Program
  - Priority habitat
  - Estimated habitat
  - Vernal pool
- Natural riparian corridor
- Protected openspace
- 21e sites
  - Tier 1A
  - Tier 1B
  - Default Tier 1B
  - Tier 1C
  - Tier 2
- Solid waste facility
- Floodplain
- Town boundary



Andrea Langhauser
Ten Mile Watershed Team Leader

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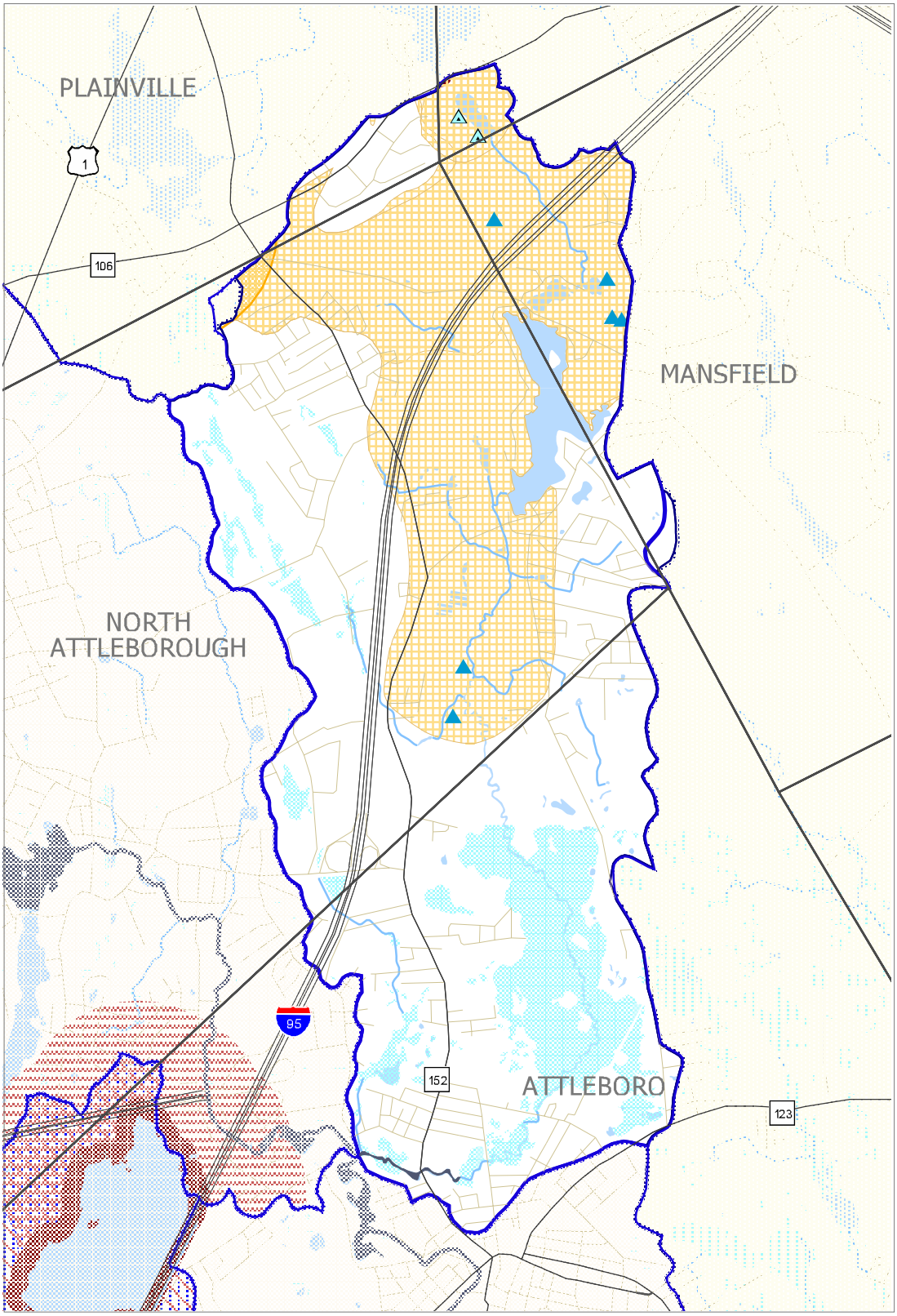
MASSGIS Massachusetts Geographic Information System
Massachusetts Executive Office of Environmental Affairs - 2003

Bungay River Watershed

Water Resources



- Subbasin boundary
- Rivers and streams
  - Stream
  - Intermittent Stream
- Open water
- Wetland
- 303d-listed rivers and streams
- 303d-listed ponds and estuaries
- Public water supply
  - Surface water
  - Groundwater
  - Distribution reservoir
  - Proposed well
- Groundwater protection
  - Interim wellhead protection zone
  - Zone II
- Surface water protection
  - Zone A -- Active
  - Zone A -- Emergency
  - Zone B-- Active
  - Zone B-- Emergency
  - Zone C-- Active
  - Zone C-- Emergency
- Outstanding Resource Waters
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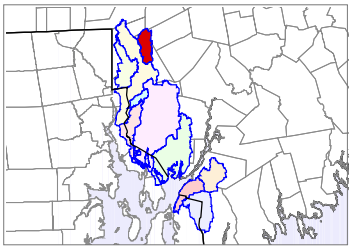
  - Reclamation (Cleanup)
  - Sanitary Discharge
- Shellfish harvest
  - Prohibited
  - Restricted
- Anadromous fish presence
  - Dam with fishway
  - Dam without fishway
  - No dam
- Boat launch site
  - Concrete
  - Paved
- Town boundary



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MASSGIS Massachusetts Geographic Information System
Massachusetts Executive Office of Environmental Affairs - 2001

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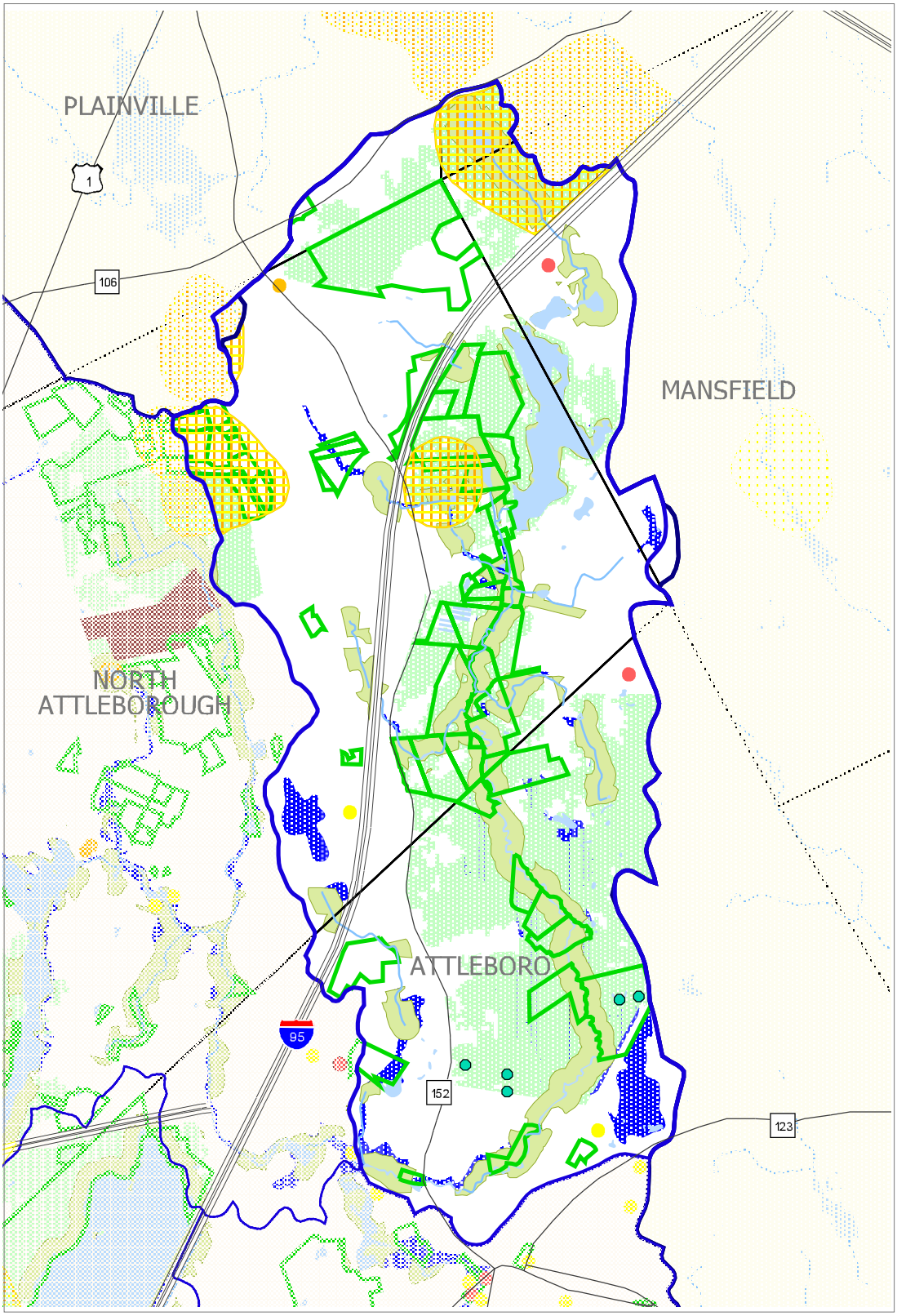
Andrea Langhauser
Ten Mile Watershed Team Leader



Bungay River Watershed

Land Resources

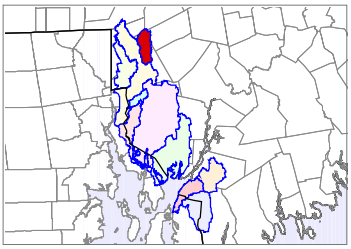
- Subbasin boundary

Rivers and streams
- Stream
- Intermittent Stream
- Open water
- Contiguous natural lands

Natural Heritage and Endangered Species Program
- Priority habitat
- Estimated habitat
- Vernal pool
- Natural riparian corridor
- Protected openspace

21e sites
- Tier 1A
- Tier 1B
- Default Tier 1B
- Tier 1C
- Tier 2

- Solid waste facility
- Floodplain
- Town boundary



Andrea Langhauser
Ten Mile Watershed Team Leader

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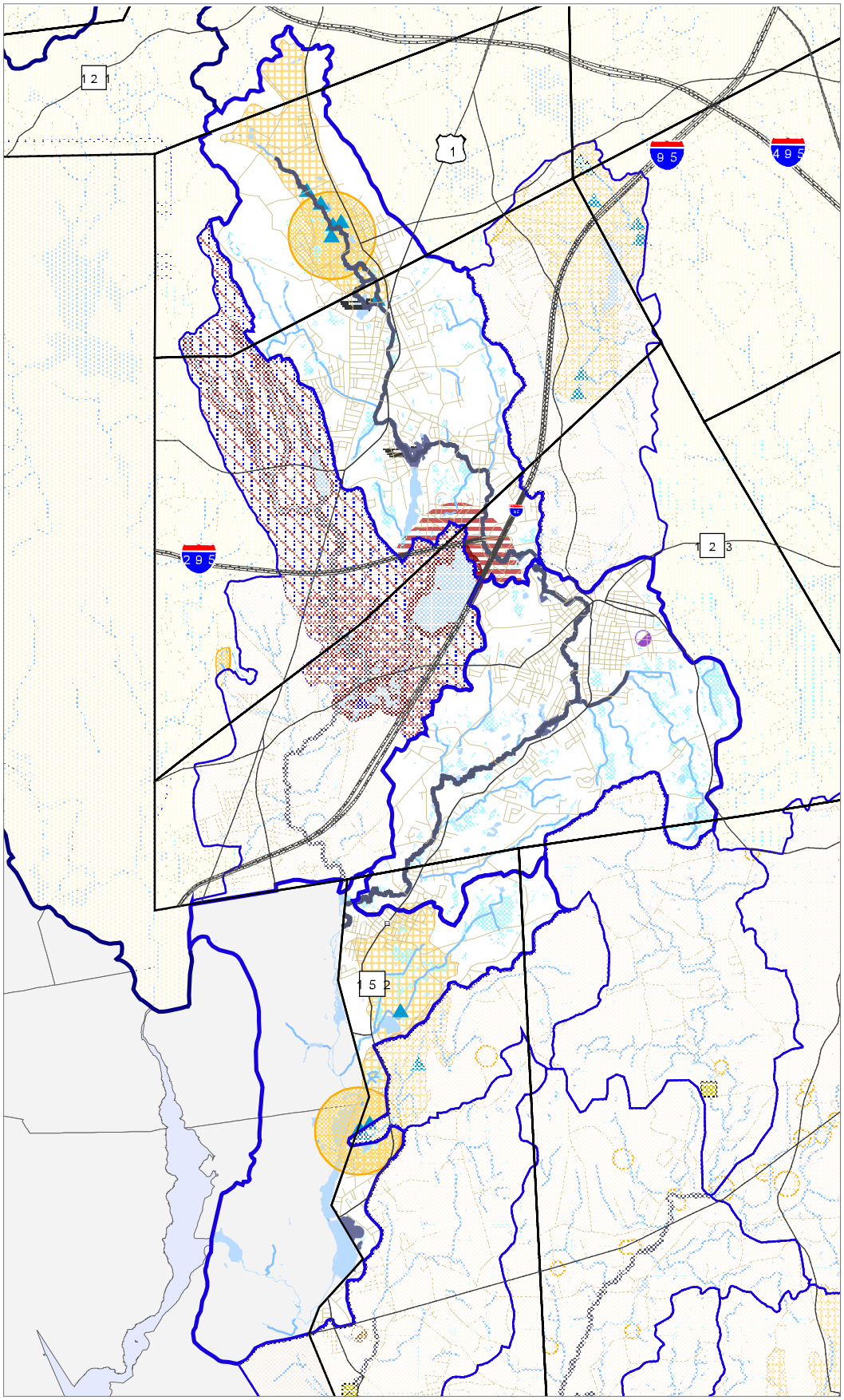
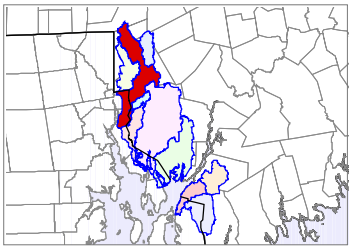
MASS GIS Massachusetts Geographic Information System
Massachusetts Executive Office of Environmental Affairs - 2001

Ten Mile River Mainstem Watershed

Water Resources



- Subbasin boundary
- Rivers and streams
  - Stream
  - Intermittent Stream
  - Open water
  - Wetland
- 303d-listed rivers and streams
- 303d-listed ponds and estuaries
- Public water supply
  - Surface water
  - Groundwater
  - Distribution reservoir
  - Proposed well
- Groundwater protection
  - Interim wellhead protection zone
  - Zone II
- Surface water protection
  - Zone A -- Active
  - Zone A -- Emergency
  - Zone B-- Active
  - Zone B-- Emergency
  - Zone C-- Active
  - Zone C-- Emergency
- Outstanding Resource Waters
  - Public Water Supply Contributor
  - Other ORW
- Ground water discharge site
  - Reclamation (Cleanup)
  - Sanitary Discharge
- Shellfish harvest
  - Prohibited
  - Restricted
- Anadromous fish presence
  - Dam with fishway
  - Dam without fishway
  - No dam
- Boat launch site
  - Concrete
  - Paved
- Town boundary



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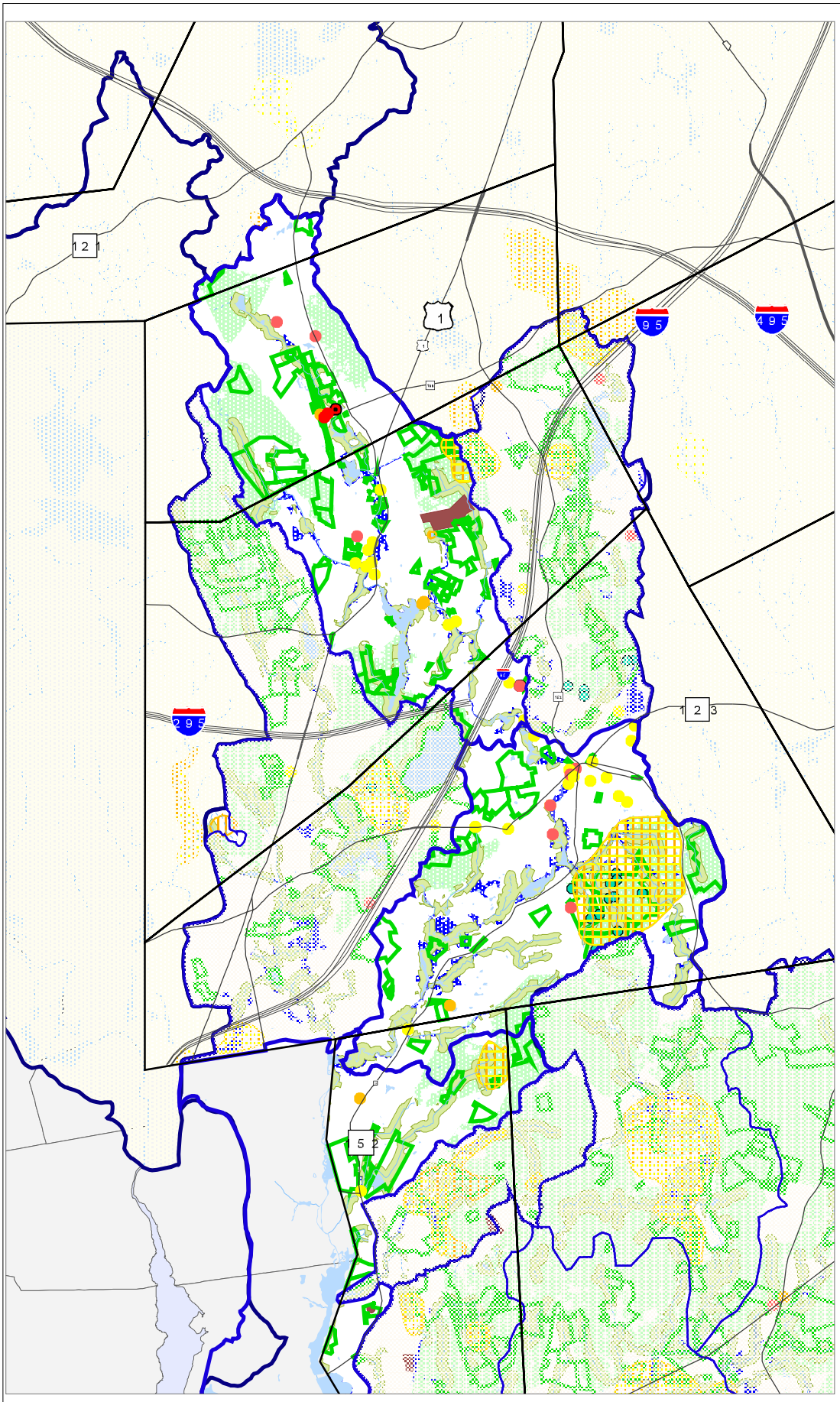
Andrea Langhauser
Ten Mile Watershed Team Leader

Ten Mile River Mainstem Watershed

Land Resources



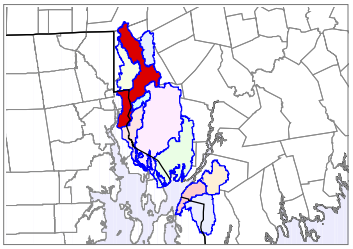
- Subbasin boundary

Rivers and streams
- Stream
- Intermittent Stream
- Open water
- Contiguous natural lands

Natural Heritage and Endangered Species Program
- Priority habitat
- Estimated habitat
- Vernal pool
- Natural riparian corridor
- Protected openspace

21e sites
- Tier 1A
- Tier 1B
- Default Tier 1B
- Tier 1C
- Tier 2

- Solid waste facility
- Floodplain
- Town boundary



Andrea Langhauser
Ten Mile Watershed Team Leader

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Watershed Team activities and stewardship

- Team representation analysis: numbers of representatives from federal, state, regional, and municipal agency, non-government organizations and businesses who actively participate in the team
- Number of watershed-wide or subwatershed public outreach meetings, and total attendance at public outreach meetings
- List of active sub-committees on the team
- List of watershed specific publications
- Number of grants received in the watershed and amount of funding involved.
- Number of land trusts in the watershed

Local planning

- List of towns with approved open space plans
- List of towns with a recent master plan (less than ten years old)
- Number of towns with current Build-out analyses (less than ten years old)
- Number of approved cluster or conservation-planned subdivisions, and percentage of total subdivisions that are cluster or conservation planned
- Number of communities with digitized parcel information
- Number of towns with environmental zoning; cluster, aquifer protection, etc.

Public access and recreation

- Number of public boat ramps, and number of those handicapped accessible
- Number of public beaches and public access sites, and number of those handicapped accessible
- Number of times per season public beaches are closed due to bacterial contamination
- Number of fish advisories, of the total number of areas assessments
- Percentage of proposed trail miles (from the Regional Open Space Plan trails map) completed and designated

6. Action Plan Matrix

6. Ten Mile River Watershed Action Plan Matrix

The following matrix lays out the mechanics for completion of each of the actions in the Ten Mile River Watershed Action Plan for Calendar Years 2002-2006. Full descriptions of the actions can be found in Chapter 3 of the Watershed Action Plan.

This matrix describes the proposed lead parties for undertaking each action, possible funding sources, and the projected time frame each action. For those actions already planned or underway, most of the information included here has already been decided. For proposed actions, the funding sources, responsible parties, and schedules are the recommendations of the Watershed Team; the details of these actions may change as plans are finalized.

More information on the funding sources listed here can be found in Appendix N: Federal and state grants available for watershed work. Where a funding source is listed as "internal," it indicates that the agency or entity proposed as the lead party is likely to be able to conduct the action as part of its operating budget.

Actions in this matrix are organized by calendar year. The actions are, where possible, correlated with the appropriate year of the watershed basin cycle. The Ten Mile River Watershed will be in Watershed Year 5 (Evaluation) in CY2002; Watershed Year 1 (Outreach) in CY2003; Watershed Year 2 (Research) in CY2004; Watershed Year 3 (Assessment) in CY2005; and Watershed Year 4 (Planning/Implementation) in CY2006. Some items do not have proposed time frames; these are primarily projects being undertaken by individual municipalities or state agencies, for which the lead party will determine the appropriate time frame.

Action	Proposed lead parties	Possible funding source	Calendar Years					Subwatershed
			02	03	04	05	06	
Goal #1: Restore and Promote the Water Quality of Rivers and Ponds								
Objective 1.1: Identify and minimize point sources of pollution throughout the watershed								
Proposed actions for the next five years:								
1.1.1 Attleboro and North Attleborough priority areas sewering	City of Attleboro and Town of North Attleborough	SRF	■	■	■	■	■	
1.1.2 DEP 1997 Water Quality Assessment monitoring recommendations								Lower Ten Mile, Bungay
- Dissolved oxygen monitoring	Volunteers and DEP	EOEA Volunteer Monitoring Grant and technical assistance			■			
- Biomonitoring stations	Volunteers and DEP	EOEA Volunteer Monitoring Grant and technical assistance			■			
- Bungay River shoreline survey	Volunteers and Riverways	Internal	■					
- Seven Mile River shoreline survey	Volunteers and Riverways	Internal		■				
- Sampling plan for Bungay River	DEP DWM	604(b)			■			
1.1.3 Reissue minor NPDES permits	EPA and DEP	Internal	■					Lower Ten Mile, Bungay
Actions already planned or underway:								
1.1.4 Headwaters industry enforcement and remediation	Town of Plainville, DEP, EPA	Internal	■	■	■	■	■	
1.1.5 Major NPDES permits	EPA and DEP	Internal					■	
1.1.6 Minor NPDES permits	EPA and DEP	Internal					■	
1.1.7 North Attleborough I/I reduction project	Town of North Attleborough	SRF						

Action	Proposed lead parties	Possible funding source	Calendar Years					Subwatershed
			02	03	04	05	06	
1.1.8 North Attleborough sewage treatment upgrades	Town of North Attleborough	Internal						
1.1.9 Attleboro high priority sewer	City of Attleboro	SRF						
1.1.10 North Attleborough CWMP	Town of North Attleborough	Internal						
1.1.11 Stormwater Phase II compliance								
- Implement	City of Attleboro, Town of North Attleborough, Town of Seekonk.	Internal		■				
- Ensure compliance	EPA and DEP	Internal			■	■		
1.1.12 North Attleborough WWTP toxicity testing	EPA and DEP; Town of North Attleborough	Internal	■	■	■	■	■	
1.1.13 Storm water performance standards compliance	EPA and DEP	Internal	■	■	■	■	■	
Objective 1.2: Identify and minimize non-point sources of pollution to rivers								
Proposed actions for the next five years:								
1.2.1 Implement non-point source recommendations	Municipalities, TMRWA, Mass. Highway Department	604(b); 319		■				Upper Ten Mile, Lower Ten Mile
1.2.2 Outreach to landowners re: buffer zone	Riverways and TMRWA	EPA Environmental Education Grant	■	■	■	■	■	
1.2.3 Seekonk landfill capping	Town of Seekonk	SRF	■					Lower Ten Mile
1.2.4 Identification of Bungay non-point sources	See Action 1.1.2							
1.2.5 TMDLs development	DEP	Internal			■			
1.2.6 Watershed-wide non-point source assessment	EOEA Team	FY01 Roundtable	■					
1.2.7 Bungay storm drain analysis	City of Attleboro	Internal	■					
Objective 1.3: Identify and minimize non-point sources of pollution to lakes and ponds								
Proposed actions for the next five years:								
1.3.1 Lake and pond assessments								Upper Ten Mile
- Further study	Municipalities and DEP	Internal; 604(b)			■	■		
- Prioritize recommendations	Municipalities and DEP	Internal; 604(b)					■	
1.3.2 Sewer Lake Como and other priority areas	City of Attleboro and Town of North Attleborough	DEM Lakes and Ponds; SRF	■					Lower Ten Mile
1.3.3 Reduce Whitings Pond phosphorus loadings	Town of North Attleborough	DEP Lakes and Ponds; 319				■		Upper Ten Mile, Lower Ten Mile
1.3.4 Investigate municipal waterfowl feeding ordinances	EOEA Team, Municipalities	Internal	■	■	■	■	■	
Actions already planned or underway:								
1.3.5 Attleboro Riverfront Zone review	EOEA Team, City of Attleboro, TMRWA	Internal	■					
1.3.6 North Attleborough Riverfront Zone review	EOEA Team, Town of North Attleborough, TMRWA	Internal	■					
1.3.7 Blackinton Pond restoration	City of Attleboro		■					
1.3.8 Lyndsay Acres sewering	Town of North Attleborough	SRF						Bungay
Objective 1.4: Remediate and prevent the spread of invasive species								

Action	Proposed lead parties	Possible funding source	Calendar Years					Subwatershed
			02	03	04	05	06	
Proposed actions for the next five years:								
1.4.1 Non-native species management	Municipalities, Con Comms, Volunteers	Municipal or private						
- Prioritize			■					
- Surveys				■	■			
- Implementation						■	■	
- Bungay monitoring	see 1.1.2							
- Seven Mile monitoring	see 1.1.2							
- Mainstem monitoring					■	■	■	
1.4.2 Reduce planting of invasive species	Team	Internal	■	■	■	■	■	
Goal #2: Build a sense of stewardship within the community								
Objective 2.1: Build the TMRW Team								
Proposed actions for the next five years:								
2.1.1 Publish quarterly articles in local publications	Team	Internal	■	■	■	■	■	
2.1.2 Increase Watershed Team membership and participation	Team	Internal	■	■	■	■	■	
2.1.3 Watershed team mission articulation	Team	Internal	■					
Actions already planned or underway:								
2.1.4 Technical assistance to municipalities	SRPEDD, DEP, Mass GIS, EOEA Team	Internal	■	■	■	■	■	
2.1.5 Notification of available state funding	EOEA Team	Internal	■	■	■	■	■	
2.1.6 GIS consistency across MA/RI border	Mass GIS, RI GIS	Internal	■					
2.1.7 Interstate Narragansett Bay grant program	MA EOEA, RI DEM	Internal	■	■	■	■	■	
2.1.8 Delay basin cycle to match Mt. Hope/Narragansett	Team	Internal	■					
2.1.9 Partner with Narragansett Bay Estuary Program	EOEA Team	Internal	■	■	■	■	■	
Objective 2.2: Strengthen regional and local watershed advocacy groups & activities								
Proposed actions for the next five years:								
2.2.1 Strengthen coordination and conduct annual joint event	Local organizations	Internal	■	■	■	■	■	
2.2.2 Coordinate advertising & publicity	Local organizations	Internal	■	■	■	■	■	
Actions already planned or underway:								
2.2.3 Coles Brook monitoring and shoreline survey	Riverways, TMRWA, local organizations	Internal	■	■	■	■	■	
2.2.4 Yearly river cleanups	Local organizations	Internal	■	■	■	■	■	
2.2.5 TMRWA staff member	TMRWA	Private foundations, MET		■				
Objective 2.3: Promote environmental education and awareness in the community								
Proposed actions for the next five years:								
2.3.1 Require education in all grants supported by Team	Team	Internal	■	■	■	■	■	
2.3.2 Yearly public forums	Local organizations, MA DEP, Riverways	Internal	■	■	■	■	■	

Action	Proposed lead parties	Possible funding source	Calendar Years 02	03	04	05	06	Subwatershed
2.3.3 Increase use of technology	Local organizations and Team	EPA Environmental Education Grant; MET						
2.3.4 Environmental education in schools	Local organizations and Team	EPA Environmental Education Grant; MET						
Actions already planned or underway:								
2.3.5 Ongoing education	EOEA Team, TMRWA, local organizations, schools	Internal						
2.3.6 Distribute watershed guide and heritage trail brochure	TMRWA	Capacity Building grant						
2.3.7 Develop and distribute WAP Outreach Map	EOEA Team	FY02 Roundtable						
2.3.8 Annual watershed recognition award	EOEA Team	Internal						
- Develop								
- Implement								
Goal #3: Improve the River's Physical Characteristics and Functions								
Objective 3.1: Reduce flooding events in Attleboro and North Attleborough								
Proposed actions for the next five years:								
3.1.1 Prioritize dam study recommendations	Municipalities, DEM Office of Dam Safety, TMRWA	Internal						
3.1.2 Install stream gauges	National Weather Service, Team, Municipalities	FEMA, municipal internal						
Actions already planned or underway:								
3.1.3 DPW Maintenance of Floodways	Municipalities	Internal						
3.1.4 Finalize ACOE flood study	EOEA Team; ACOE	ACOE						
3.1.5 Finalize Flood Warning Response Plan	Municipalities, EOEA Team	Internal						
3.1.6 Route 1 wetlands restoration	Town of North Attleborough;	Corporate Wetlands Banking;						
3.1.7 Falls and Whitings Ponds flood control	Town of North Attleborough	DEM						
3.1.8 Replace/repair County St. bridge	City of Attleboro							
3.1.9 Investigate Wetherell's Pond land	Town of Plainville	Internal						
Objective 3.2: Create physical characteristics to fully support aquatic life								
Proposed actions for the next five years:								
3.2.1 Measure flow conditions during shoreline surveys	see 1.1.2							Upper Ten Mile, Lower Ten Mile
3.2.2 Conduct Bungay and 7 Mile habitat studies during shoreline surveys	see 1.1.2							
Actions already planned or underway:								
3.2.3 5-year WMA permit reviews	DEP	Internal						
3.2.4 Monitoring of Mansfield & Foxborough wells	Towns of Mansfield and	Internal						
3.2.5 Continuation of fish ladders and dam breaches efforts	Save the Bay, RI DEM, E. Providence	ACOE; NOAA						

Action	Proposed lead parties	Possible funding source	Calendar Years 02	03	04	05	06	Subwatershed
Goal #4: Reduce Negative Impacts of Growth on the Watershed's Environment								
Objective 4.1: Continue and coordinate local land use planning and strategizing								
Proposed actions for the next five years:								
4.1.1 Team support of community actions	EOEA Team, Vision 2020, municipalities	Internal	■	■	■	■	■	
4.1.2 Implement Executive Order 418	EOEA Team, Vision 2020, municipalities	Internal	■	■	■	■	■	
4.1.3 Encourage adaptive reuse of mills	EOEA Team, Vision 2020, municipalities	Internal	■	■	■	■	■	
4.1.4 Support redevelopment of urban sites	EOEA Team, Vision 2020, municipalities	Internal	■	■	■	■	■	
4.1.5 Refurbish Blackinton Pond historic district	City of Attleboro		■	■	■			Lower Ten Mile
Actions already planned or underway:								
4.1.6 Prioritize low-risk areas for sewering	Town of North Attleborough	Internal						
4.1.7 Update Attleboro Open Space Plan	City of Attleboro							
4.1.8 Update Plainville Open Space Plan	Town of Plainville							
4.1.9 Update Attleboro Comprehensive Plan	City of Attleboro							
4.1.10 North Attleborough downtown revitalization	Town of North Attleborough							
4.1.11 Recruit DHCD representative to Watershed Team	EOEA Team	Internal	■	■	■	■	■	
Objective 4.2: Continue regional land use planning and strategizing								
Proposed actions for the next five years:								
4.2.1 Team support of community actions	EOEA Team, municipalities	Internal	■	■	■	■	■	
4.2.2 Implement Executive Order 385	State agencies, municipalities	Internal	■	■	■	■	■	
4.2.3 Encourage creation of Priority Development Areas	EOEA Team, municipalities	Internal					■	
4.2.4 Continue Vision 2020 regional coordination	Vision 2020, municipalities	Internal	■	■	■	■	■	
Objective 4.3: Plan for adequate water supply to meet growth in demand								
Proposed actions for the next five years:								
4.3.1 Team support of community actions	EOEA Team, municipalities	Internal	■	■	■	■	■	
4.3.2 Comprehensive Water Supply Plan implementation	EOEA Team	Internal				■	■	
4.3.3 Route 95/ Manchester Reservoir risk minimization	City of Attleboro, Mass Highway	Internal			■	■		
4.3.4 Watershed recognition award	see 4.1.6							
Actions already planned or underway:								
4.3.5 Comprehensive Water Supply Plan Phase I	DEM	FY01 Roundtable	■					
4.3.6 Comprehensive Water Supply Plan Phase II	EOEA Team	FY02 Roundtable			■			
4.3.7 Complete two-town water treatment plant	Town of North Attleborough; Town of Plainville	SRF	■					
4.3.8 Tie in Brown Ave. wellfield to Seekonk drinking water plant	Town of Seekonk	SRF	■					
4.3.9 Forestry management for public water supplies	EOEA Team	FY02 Roundtable	■					

Action	Proposed lead parties	Possible funding source	Calendar Years					Subwatershed
			02	03	04	05	06	
4.3.10 Brown Avenue wellfield rehabilitation	Town of Seekonk	SRF	■					
Goal #5: Implement the Regional Open Space Plan								
Objective 5.1: Protect regionally significant open space, unique wildlife areas, working landscapes, and water supply recharge areas								
Proposed actions for the next five years:								
5.1.1 Support land preservation and acquisition	EOEA Team, Regional Open Space Committee	Internal	■	■	■	■	■	
5.1.2 Wetlands Restoration Plan implementation	EOEA Team	Internal						
5.1.3 Team support of community actions	EOEA Team	Internal	■	■	■	■	■	
5.1.4 Support Self-Help Grant applications	EOEA Team	Internal	■	■	■	■	■	
5.1.5 Watershed recognition award	see 4.1.6							
5.1.6 Encourage promotion of agriculture	EOEA Team, SRPEDD	SEMAP	■	■	■	■	■	
5.1.7 Encourage forestry management plans	EOEA Team	DEM	■	■	■	■	■	
Actions already planned or underway:								
5.1.8 Create permanent Regional Open Space Committee	EOEA Team, Regional Open Space Committee	SRPEDD, FY02 Roundtable	■	■	■	■	■	
5.1.9 Prioritization and ranking of land for acquisition	EOEA Team, Regional Open Space Committee	Internal	■					
5.1.10 Wetlands Restoration Plan completion	EOEA Wetlands Restoration and Banking Program	ACOE		■				
5.1.11 Route 1 wetland restoration	see 3.1.6							
Objective 5.2: Develop multi-modal trail systems								
Proposed actions for the next five years:								
5.2.1 Plan for and develop regional "through trails"	EOEA Team, Regional Open Space Committee, municipalities	DEM, NPS	■	■	■	■	■	
5.2.2 Create spur trails to link to existing trail systems	EOEA Team, Regional Open Space Committee, municipalities	DEM, Internal	■	■	■	■	■	
5.2.3 Local trails and pedestrian-friendly development	Municipalities	DHCD, Internal	■	■	■	■	■	
5.2.4 Provide canoe access	City of Attleboro	SRF, Internal						Lower Ten Mile
5.2.5 Hire an Open Space Plan Coordinator	EOEA Team, Reginal Open Space Committee	FY02 Roundtable	■	■	■	■	■	
Actions already planned or underway:								
5.2.6 Complete canoe access and parking in Attleboro	City of Attleboro	DFWELE	■					

7. Conclusions and overall vision

The goals, objectives and actions outlined in the Ten Mile River Watershed Action Plan are the result of a careful review of existing literature and extensive discussions among the watershed team and community partners and reflect the thoughtful comments received through public forums and written comments. Real success in environmental quality can only occur through a focused call to action and by building upon the invaluable partnerships the team has created over the last few years.

The Watershed Team consists of a very diverse group of individuals and organizations whose interests in watershed planning and other activities are varied. All members are working together to find a balance between achieving their individual goals and meeting the needs of the others. Although each member may have a different vision of the watershed's future, open dialogue and collaborative efforts to find solutions to environmental challenges are a common thread that binds them.

Building upon and strengthening the Watershed Team can achieve the goals and objectives outlined in this Watershed Action Plan. By the time the next plan is developed five years from now the Team is confident that measurable improvements in water quality, stewardship, physical environmental characteristics, and biological health and diversity will occur. Additionally, the enjoyment of the watershed's bountiful natural resources will be enhanced through protection and expansion of public access to open space, and improved planning for the development that is destined to occur.

While supportive of the diverse set of activities being undertaken by team members and partners throughout the watershed, the Team also has identified several of its own overarching goals that, when undertaken as specific actions, can help the watershed team and community partners achieve long-term environmental quality within the watershed. Listed below are the five goals and corresponding long-term accomplishments that the Team will strive toward.

Restore and Promote the Water Quality of Rivers and Ponds

Achieve measurable improvements to water quality in the next sampling round (year 2004)

As the source of drinking water supply to the City of Attleboro, the upper Seven Mile River and Four Mile River should meet the standards for Outstanding Resource Waters (Class A) by the year 2010.

With Coles Brook subwatershed providing significant recharge to Seekonk's public water supply wells, designated water quality standards (Class B) for fecal coliform should be met by the year 2010.

All other waters should meet the water quality standards of swimmable and fishable by the year 2015.

Complete lake assessments for all 36 impoundments by the year 2005.

Complete lake management plans and remedial action for 11 of the 22 impoundments with completed assessments by the year 2005.

Build the Sense of Stewardship within the Community

Maintain open communication and maximize partnering opportunities between team members and community partners.

Strengthen ties between partners with similar missions both within the Ten Mile River Watershed and the greater Narragansett Bay Watershed through the following actions:

Implement Interstate Partnership for Narragansett Bay Grant Program with RIDEM and USEPA.

Multiple watershed partners annually co-sponsor public outreach and education events.

Delay the basin cycle for 2 years in the Ten Mile River Watershed so it coincides with the basin activities of the Mass. Narragansett Bay Watershed Team.

Recognize the innovative actions of municipal, state or citizen partners that further the goals of the Watershed Action Plan through an annual award ceremony.

Improve the River's Physical Characteristics and Functions

Restore herring, alewife, eels and American shad to the Ten Mile River in Massachusetts by 2005.

Reduce Negative Impacts of Growth on the Watershed's Environment

Facilitate regional growth planning efforts of local communities through water supply management.

Implement the Regional Open Space Plan

Establish a protected riparian greenbelt along the length of the Bungay River and Seven Mile River.

Establish connecting trails along the length of the Ten Mile River to Narragansett Bay for biking, hiking and horseback riding. Connect walking trail to the Warner Trail by the year 2010. Connect biking trails to the East Bay Bike Path by 2015.

Appendix A: Major Permits

Ten Mile River Watershed (52)

PERMITTEE	MUNICIPALITY	PERMIT No.	DATE ISSUED	DATE EXPIRES	COMMENTS	RECEIVING WATER
PERMIT: Water Management Act					**Volume/No. of Sources**	
Texas Instruments	Attleboro	9P-427-016.01	8/31/1992	11/30/2011	0.23 M.G.D./ 2 wells	Thatcher (Speedway) Brook
Water Department	Seekonk	9P-427-265.01	1-Jan-98	Jan 1,2008	1.35-1.57 M.G.D./2 wells	Coles Brook
Water Department	Foxboro	9P2-427-099.01	Under review w/ Interbasin Transfer		1.15 M.G.D./2 wells	Bungay River (Witch Pond Swamp)
Water Department	Attleboro	9P2-427-016.01	1-Jan-98	Jan 1,2008	0.15 - 0.18 M.G.D.M.G.D. /Orrs Pond	Seven Mile River
Mantrose-Haeuser	Attleboro	9P2-427-016.02			0.46 M.G.D. /3 wells / Process to WWTP; NCCW to River	TMR (Middle?)
Water Department	Mansfield	2P2-427-167.01	4/6/2001	11/30/2001	0.99 MGD/1 well	Bungay River (Witch Pond Swamp)
Subtotal, WMA Permits = 6						
Registration: Water Management Act					**Volume/No. of Sources**	
Boro Sand & Stone	No. Attleborough	427-211.02	20-Mar-01	21-Jan-08	0.44 MGD/Reservoir/washing gravel	Bungay River; need to verify volumes in 2003
Water Department	No. Attleborough	427-211.03			2.1 M.G.D. system-wide/7 wells	1 well Ten Mile; 2 wells Bungay
Water Department	Attleboro	427-016.01			? MGD/11 wells	Bungay River and Wading River (Taunton)
Water Department	Mansfield	427-167.01			0.59 M.G.D./4 wells **{add fifth well}**	Bungay River
Water Department	Seekonk	427-265.01			? MGD/ 4 wells	Coles Brook
Water Department	Plainville	427-238.01			? MGD/1 well	Upper Ten Mile River
US Fish & Wildlife	No. Attleborough	427-211.01			1.71 M.G.D. system-wide/4 sources: River and 3 wells	Bungay River
Ledgemont C.C.	Seekonk	427-265.02	10-Oct-97	1/21/2008	0.09 MGD over 214 days for 19.26 MGY/ 1 GW, 1 SW/irrigation	Coles Brook; in 1999 used more water over fewer days (21.8 MGY or 0.182 MGD over 120 days)
Subtotal, WMA Regg = 8						
PERMIT: Groundwater Discharge Permits						
Subtotal, GD: = 0						
PERMIT: NPDES, Major					**Volume/Type/Comments**	
Wastewater Plant	Attleboro	MA0100595	Sept.30, 1999	Oct. 30, 2004	8.5 M.G.D./treated WW	Ten Mile River
Wastewater Plant	No. Attleborough	MA010136	1999	2004	4.61 M.G.D./treated WW	Ten Mile River
Emerald Square Mall	No. Attleborough	MA0030244	1999	2004	treated stormwater / 2 created wetlands / detailed BMPs.	Seven Mile River
Texas Instruments	Attleboro	MA0001791	Mar. 22, 2000	Sept. 30, 2004	stormwater + 0.25 M.G.D. treated groundwater/3 outfalls, 1 for sampling	Thatcher (Speedway) Brook
Subtotal, Majors: = 4						

LEGENDS:
NPDES: National Pollution Discharge Elimination System
MGD: Million Gallons per Day
NCCW: Non-Contact Cooling Water
WW: Wastewater

Appendix A: Major Permits

Ten Mile River Watershed (52)

PERMITTEE	MUNICIPALITY	PERMIT No.	DATE ISSUED	DATE EXPIRES	COMMENTS	RECEIVING WATER
PERMIT: NPDES, Minor						
Handy & Harmon	Attleboro	MA0000159			NCCW to storm drain	Ten Mile River
Fortifiber Corp.	Attleboro	MA0003701	1975		no limit / process + NCCW	Bungay River
US Fish & Wildlife	No. Attleborough	MA0005398	1979		no limit / fishpond + raceway water	Bungay River
Mantrose-Haeuser	Attleboro	MA0005703	1976		0.65M.G.D.83 º /3 outfalls	Ten Mile River
Mantrose-Haeuser	Attleboro	MAG250958		1995	0.65M.G.D./cooling water/3 outfalls	Ten Mile River
Bristol Nursing Home	Attleboro	MA0023428			0.005 M.G.D.	Thatcher (Speedway) Brook
Craft, Inc.	Attleboro	MA0002364			discharge terminated	Seven Mile River
Subtotal, Minors: = 7						
PERMIT: NPDES, Industrial Stormwater						

LEGENDS:
NPDES: National Pollution Discharge Elimination System
MGD: Million Gallons per Day
NCCW: Non-Contact Cooling Water
WW: Wastewater

Appendix B: Watershed Team List

TEAM*	NAME	JOB TITLE	ORGANIZATION	ADDRESS	CITY	STATE	ZIP	EMAIL	PHONE
TM, MHN	**Langhauser, Andrea**	**Watershed Team Leader**	**Executive Ofiice of Environmental Affairs (EOEA)**	**20 Riverside Drive**	**Lakeville**	**MA**	**02347**	**Andrea.Langhauser@state. ma.us**	**W(508) 946-2878 F(508) 947-6557**
TM-MHN	Bates, Steve		DEM/Freetown Forest	Dighton Rock State Park P.O.Box 171	Assonet	MA	02702	Freetown Forest@Field@DEM Carver	W)508-644-5522 F) 508-644-5052
MHN	Brown, Colleen	Conservation Commission Agent	Town of Swansea	Town Hall, 68 Stevens Road	Swansea	MA	02777	swanseaconcom@netzero.net	W(508) 673-6467 F(508)324-6706
TM		Sanctuary Dir.	Mass. Audubon Society	1417 Park Street	Attleboro	MA	02703	ebrunkhurst@massaububon.org	(508)223-3060
MHN	Cairo, Allison		Mass. Community Water Watch	Bristol Community College	Fall River	MA		waterwatch_bcc@yahoo.com	(W)508-678-2811 x2557
TM	Calabro, Rachel	Riverways Program	DFWELE	251 Causeway Street, Suite 400	Boston	MA	02114	Rachel.Calabro@state.ma.us	W(617)626-1549 F(617)626-1505
MHN	Cipolla III, Peter V.	Town Planner & Conservation Agent	Town of Rehoboth	148R Peck Street	Rehoboth	MA	02769	pvc3@sneplanet.com	(W)508-252-6891; (F)508-252-5342
TM, MHN	Davies, Tena	Basin Chief	DEP-SERO	20 Riverside Drive	Lakeville	MA	02347	Tena.Davies@state.ma.us	(508) 946-2804
TM	DeBlander, Bernadette	Conservation Commission Agent	Town of Seekonk						
MHN	Delpapa, Cindy	Riverways Program	DFWELE	251 Causeway Street, Suite 400	Boston	MA	02114	Cindy.Delpapa@state.ma.us	(617)626-1545
TM, MHN	Drury, Michele	Office of Water Resources	DEM	251 Causeway Street, Suite 800	Boston	MA	02114	Michele.Drury@state.ma.us Tplaza(617) 973-8745	W(617)626-1366 F(617)626-1449
TM, MHN	Ferguson, Wenley		Save the Bay	434 Smith Street	Providence	RI	02908-3770	wferguson@savebay.org	(401)272-3540x105 F(401)273-7153
TM	Marshall, Jim	Water & Wastewater Superindent	Town of Plainville	P.O.Box 1565	Plainville	MA	02762	jimmarshall2@worldnet.att.net	508-695-6871; (F) 508-695-6736
MHN	Horton, Robert		DEM/Fall River Heritage State Park	H)475 Warren Ave, W) 200 Davol Street	H) Swanea W) Fall River	MA	02777 w)02720		W) (508) 675-5759: F)(508)675-5758
TM, MHN	Hurley, Steve	Biologist	Division of Fisheries and Wildlife	195 Bournedale Road	Buzzards Bay	MA	02532	Steve.Hurley@state.ma.us	W (508) 759-3406 F(508)759-0381
MHN	Gass, Bob	SE Asst. Regional Coordinator	CZM	20 Riverside Drive	Lakeville	MA	02347	Robert.Gass@state.ma.us	(508) 946-2759
TM	Johnson, Don	Town Planner	Town of North Attleborough	Town Hall, 43 South Washington Street	North Attleborough	MA	02760	djohnson@naisp.net	W(508)699-0116 F(508)699-0154
MHN	Kolek, Drew	*******	DMF	50A Portside Drive	Pocasset	MA	02559	Andrew.Kolek@state.ma.us	(508) 563-1779 x103
MHN	Krahforst, Christian	Marine Monitoring	CZM	251 Causeway Street, Suite 800	Boston	MA	02114	Christian.Krahforst@state.ma.us	W(617)626-1216 F(617)626-1181
TM, MHN	Macqueen, Marc	********	NRCS - Massachusetts CAP	15 Cranberry Highway	West Wareham	MA	02576	Marc.MaQueen@mawestware.fsc.usda.gov	(508)295-1481x113 F (508)291-2368
TM	Mercer, Rae	Conservation Commission	Town of Plainville	140 East Bacon St. Apt 1E	Plainville	MA	02762	**********	W (508) 695-3147 H (508) 699-4827
TM, MHN	Napolitano, Bill	Environmental Planner	SRPEDD	88 Broadway Street	Taunton	MA	02780	bnap@srpedd.org	W (508) 824-1367 F (508)880-7869

*TM = Ten Mile; MHN = Mount Hope/Narragansett

Appendix B: Watershed Team List

TEAM*	NAME	JOB TITLE	ORGANIZATION	ADDRESS	CITY	STATE	ZIP	EMAIL	PHONE
TM	Nicholson, Paul	Superintendent	Waste & Wastewater Dept.	City Hall 77 Park street	Attleboro	MA	02703	**********	WTP: (508)222-0019; (F) 223-2271
TM/MHN	Nigrelli, Gail	Conservation Commission Agent	Town of Seekonk					Tisgale@aol.com	
TM	Ogunbameru, Augustus	********	Office of Technical Assistance	251 Causeway Street, Suite 900	Boston	MA	02114	Augustus.Ogunbameru@ state.ma.us	W(617)626-1065 F(617)626-1095
TM/MHN	Rosinoff, Bruce	Region 1 CMA	US Environmental Protection Agency (EPA)	One Congress Street	Boston	MA	02114-2023	rosinoff.bruce@epa.gov	W(617)918-1698 F(617)918-1505
TM	Saari, Derek	Conservation Commission Agent	North Attleboro Conservation Commission	Town Hall, 43 South Washington Street	North Attleboro	MA	02760		W(508) 699-0125: F(508)643-1268
TM	Simms, Thomas Sr.	Board of Selectman	North Attleborough	43 South Washington Street	North Attleboro	MA	02760	**********	(508) 699-0100
TM MHN	Soares, Scott		MA Dept. of Food & Agriculture	251 Causeway Street, Suite 500	Boston	MA	02114	scott.soares@state.ma.us	(617) 626-1730
MHN	Stewart, Ray	Town Planner	Town of Swansea	Town Hall, 68 Stevens Road	Swansea	MA	02777	**********	(508) 324-6730; F(508)324-6707
TM	Stankovitch, Michael	Director	North Attleborough DPW	43 South Washington St.	North Attleboro	MA	02760	mstankov@naisp.net http://www.naisp.net/users/townhall/dpw	W(508)695-9621; F(508)699-9485
TM	Sullivan, Jennifer	Research Associate	Tellus Institute	11 Arlington Street	Boston	MA	02116	sullivan@tellus.org	W(617) 266-5400; (F) 266-8303
TM	Tanner, Edward M.	Env. Planner	Attleboro City Hall	77 Park Street	Attleboro	MA	02703	conservation@ci.attleboro.ma.us	W(508)223-2222 F(508)222-3046
MHN	Turner, Chris	Watershed Section	Rhode Island DEM	235 Promenade Street	Providence	RI	02908	ardent@brainiac.com	(401) 222-4700 x7229
TM, MHN	Wiles, Richie	Basin Coordinator	DEP-SERO	20 Riverside Drive	Lakeville	MA	02347	Richard.Wiles@state.ma.us	W (508) 946-2767 F(508)947-6557

*TM = Ten Mile; MHN = Mount Hope/Narragansett

Watershed Team Partners
Ten Mile/Narragansett Bay Watersheds

TEAM*	NAME	JOB TITLE	ORGANIZATION	ADDRESS	CITY	STATE	ZIP	EMAIL	PHONE
TM/ MHN	Ardito, Tom	Outreach Coordinator	Narragansett Bay Estuary Program	235 Promenade Street	Providence	RI	02908	ardito@earthlink.net	W(401)222-3961 x7237 F(401)521-4230
TM	Ayrassian, Gary	City Planner	City of Attleboro	City Hall, 77 Park street	Attleboro	MA	02703	**********	(508) 223-2222
TM/ MHN	Baldwin, Bruce	Superintendent	Seekonk Water District	50 Water Lane PO Box 97	Seekonk	MA	02771	**********	w) (508) 761-8170 F)761-9928
MHN	Basile, Alfred		US EPA - Office of Ecosystem Protection	One Congress Street - Suite 1110	Boston	MA	02114 - 2023	Basile.Alfred@epa.gov	W(617)918-1549
TM	Blair, Janet	Board Member	TMRWA	20 Orlando Lane	Attleboro	MA	02703	janblair@aol.com	508-226-5457
MHN	Boudreau, Steven	Ex. Sec.	Town of Rehoboth	148R Peck Street	Rehoboth	MA	02769		(508) 252-3758 F:(508)252-5342
TM	Bragg, Russ	Board Member	TMRWA	24 Melby Road	Attleboro	MA	02703	shadeplant@mediaone.net	
TM	Brown, Barbara	citizen	TMRWA	Bank Street	Attleboro	MA	02703	brown.barbara@epa.gov	
TM, MHN	Brownell, Jeffrey	319 Coordinator	DEP-SERO	20 Riverside Drive	Lakeville	MA	02347	jeffrey.brownell@state.ma.us	(w) 508-946-2702
TM	Brunkhurst, Emily	Education Consultant		187 Raymond Hall Drive	North Attleboro	MA	02760	gavia@mail.naisp.net	(508)643-3955
MHN	Burgess, Richard	Harbormaster	Town of Swansea	Town Hall, 68 Stevens Road	Swansea	MA	02777	SWANSEAHARBORMAS @cs.com	508-674-4545
MHN	Chapman, Priscilla	ConComm Agent	City of Fall River	One Government Center	Fall River	MA	02722		(508)324-2340; (F) 508-324-2340
MHN	Chenevert, J.R.	Health Agent	Town Of Seekonk	Seekonk Town Hall 100 Peck Street	Seekonk	MA	02771		W(508)336-2950
TM/ MHN	Cheverant, J.R.	Health Agent	Town Of Seekonk	Town Hall, 100 Peck Street	Seekonk	MA	02772	**********	(508)336-2950; (F) 336-3137
TM	Chikkalingaiah, H.	Professional Engineer	US EPA	One Congress Street, Suite1100	Boston	MA	02114-2023	CHIKKALINGAIAH.HOSUR@ epa.gov	W (617) 918-1505 F(508)918-1505
TM	Ciccone, George	Director	Attleboro Office of Economic Development	City Hall, 77 Park Street	Attleboro	MA	02705	**********	(508) 223-2206
TM	Clarner, Marie	Chair	North Attleboro Conservation Commission	34 Moran Street	North Attleboro	MA	02760	school:(508)643-2130 x4126; cellphone 617-335-2390	H(508) 695-3840
TM/ MHN	Coffin, Peter	Extension Educator	UMASS Cooperative Extension	5 Irving Street	Worcester	MA	01609	pcoffin@umext.umass.edu	W(508)831-1223
MHN	Correia, Robert	Representative	Commonwealth of Massachusetts	State House, Rm.#122	Boston	MA	02133	**********	(617) 722-2810
MHN	Dalpe, Bill	Tree Wardem	Town of Rehoboth	Highway Department	Rehoboth	MA	02769		(w) 508-252-3912; (h) 508-252-6980

*TM = Ten Mile; MHN = Mount Hope/Narragansett

Watershed Team Partners
Ten Mile/Narragansett Bay Watersheds

TEAM*	NAME	JOB TITLE	ORGANIZATION	ADDRESS	CITY	STATE	ZIP	EMAIL	PHONE
MHN	Deacutis, Christopher	Supr. Env. Scientist	Narragansett Bay Estuary Program	235 Promenade Street	Providence	RI	02908	deacutis@etal.uri.edu	W(401)222-4700x7270 F(401)521-4230
TM	Doucette, Donald M.	Board Member	TMRWA	219 Phillips Street	Attleboro	MA	02703	donan@tp.net	(508)226-1185
MHN	Faulhaber, Carolyn	President	Pokanoket Watershed Alliance	One Craig Drive	Barrington	RI	02806	PWA5@aol.com	(401) 245-3036
MHN	Fiola, Kenneth	Director	Fall River Office of Economic Development	City Hall	Fall River	MA	02722	**********	(508) 324-2620; (F) 508-677-2840
TM	Goulet, Dan	Board Member	TMRWA	110 Grant Street	Attleboro	MA	02702	dannigoulet@hotmail.com	508-226-6724
TM	Hall, Joe	President	TMRWA	32 Holden Street	Attleboro	MA	02703	joseph.hall@hanscom.af.mil	H (508)226-4738
MHN	Hartnett, Jim	City Planner	City of Fall River	City Hall, One Government Center	Fall River	MA	02723	**********	(508) 324-2561
MHN	Hogan, Debi	Consultant	Mass. Agriculture in the Classroom	PO Box 345	Seekonk	MA	02771	dchogan@sprynet.com	(508)336-4426
TM	Jaques, Cheryl	Senator; Aid Steve Habbe	Commonwealth of Massachusetts	State House, Rm.#312B	Boston	MA	02133	CJacques@senate.state.ma.us	(617) 722-1555 x1557
TM/ MHN	Keegan, Bill	Town Administrator	Town of Swansea	100 Peck Street	Swansea	MA	02771		(508)336-2910; FAX 336-3137
TM/ MHN	Kerry, John	US Senator	United States Senate	222 Milliken Place, Suite 311	Fall River	MA	02722	john_kerry@kerry.senate.gov	(508)677-0522
TM/ MHN	Kleiman, Richard	Sr. Project Manager	Environmental Science Services, Inc.	888 Worcester Street, Suite 240	Wellesley	MA	02482	rkleiman@essgroup.com	(781) 431-0500 x102 F:(401) 431-7434
TM	Lepper, John	Representative	Commonwealth of Massachusetts	State House, Rm.#548	Boston	MA	02133	**********	(617) 722-2803
MHN	Travis, Philip	Representative; aid: Wendy Bouler	Commonwealth of Massachusetts	State House, Rm.#236	Boston	MA	02133	Rep.PhilipTravis@house.state.ma.us	(617) 722-2430; (508)252-3683
MHN	Travis, Philip	Representative; aid: Wendy Bouler	Commonwealth of Massachusetts	State House, Rm.#236	Boston	MA	02133	Rep.PhilipTravis@house.state.ma.us	(617) 722-2430; (508)252-3683
TM	Fernandez, Joe	Town Administrator	Town of Plainville	142 South Street PO Box 1717	Plainville	MA	02762	**********	(508) 695-3142 x10
TM	Maietta, Robert J.	********	DEP-DWM	DEP-CERO, 627 Main Street	Worcester	MA	01608	Robert.Maietta@state.ma.us	W (508) 767-2793 F(508)791-4131
MHN	Marquis, Robert	Superitendent	Swansea Water District	700 Wilbur Avenue	Swansea	MA	02777	**********	(508) 676-9097; FAX 676-7452
TM/ MHN	Masson, Veronica	Watershed Section	Rhode Island DEM	235 Promenade Street	Providence	RI	02908	vmasson@dem.state.ri.us	(401) 222-4700 x7274 F: (401)521-4230

*TM = Ten Mile; MHN = Mount Hope/Narragansett

Watershed Team Partners
Ten Mile/Narragansett Bay Watersheds

TEAM*	NAME	JOB TITLE	ORGANIZATION	ADDRESS	CITY	STATE	ZIP	EMAIL	PHONE
MHN	Mazurak, Peter	Health Agent	Town of Rehoboth	Town Hall, 148 Peck Street	Rehoboth	MA	02769	**********	(508) 252-3099; FAX 252-5342
MHN	McCarthy, Mike		Congressman Patrick Kennedy's Office	286 Main Street - Suite 600	Pawtucket	RI	02860-2893		W(401)729-5600
TM/ MHN	Mello, Charles Jr.	Town Planner	Town of Seekonk	Town Hall, 100 Peck Street	Seekonk	MA	02771	**********	(508) 336-2960
MHN	Menard, Joan	Senator	Commonwealth of Massachusetts	State House, Rm.#26	Boston	MA	02133	**********	(617) 722-2080
TM	Merims, Linda		TMRWA		North Attleboro	MA	02760	lbm@ici.net	
TM/ MHN	Messenger, Nancy	President	Seekonk Land Trust		Seekonk	MA	02771	taffeta2@juno.com	508-336-8885
MHN	Migliore, Joseph	Shellfish	Rhode Island DEM	235 Promenade Street	Providence	RI	02908	Jmiglior@DEM.state.ri.us	W(401) 222-3961 F(401)521-4230
MHN	Norton, Thomas	Senator	Commonwealth of Massachusetts	State House, Rm.#333	Boston	MA	02133	**********	(617) 722-1222
MHN	Pearson, Brian	City Council, Env. Subcomm./Rep. Sullivan Aid	City of Fall River	Room 443, State House	Boston	MA	02133		W(617)722-2460 F(617) 722-2897
TM	Poirier, Elizabeth	State Rep. aid: Diana Amaral	Commonwealth of Massachusetts	Room 237, State House	Boston	MA	02133	Rep.ElizabethPoirier@house.state.ma.us	w) 722-2305; F(617)722-2346; Field (508)695-3296
MHN	Poulos, Paul	Director	Fall River-Office of Community Development	162 Main Street	Fall River	MA	02720	**********	(508) 679-0131
MHN	Prell, Dr. Warren	Dept. of Geological Science	Brown University	PO Box 1846	Providence	RI	02908	Warren_Prell@Brown.edu	(401) 863-3221
MHN	Rayner, Doug		Pokanoket Watershed Alliance	88 Prospect Street	Barrington	RI	02806	cudosearch@aol.com	W(401)246-1326
TM	Redding, Pat	Planning Board Member	Town of North Attleborough	**********	North Attleboro	MA	02760	**********	(508) 699-7393
MHN	Reno, Len		NRCS	15 Cranberry Highway	Wareham	MA	02576	Leonard.Reno@MaWestware. fscusda.gov	(508) 295-1481
MHN	Rigsby, Rad	President	Palmer River Watershed Association	11 Billings Road	Rehoboth	MA	02769	eurad@media.one.net	
MHN	Robbins, Jackie	member	Swansea Conservation Commission	36 Highland Road.	Somerset	MA	02726-1315	grobbins@gateway.net	508-675-7462
TM	Spaner, William	Director	Community Development for Attleboro	199 County Street	Attleboro	MA	02703	**********	(508) 226-5116

*TM = Ten Mile; MHN = Mount Hope/Narragansett

Watershed Team Partners
Ten Mile/Narragansett Bay Watersheds

TEAM*	NAME	JOB TITLE	ORGANIZATION	ADDRESS	CITY	STATE	ZIP	EMAIL	PHONE
TM	Sprague, Clyde	Board Member	TMRWA	38 Westwood Park Circle	Attleboro	MA	02703	csprague@foxboro.com	W(508)549-2253 F(508)549-4330
TM	Sprague, Jo Ann	Senator	Commonwealth of Massachusetts	State House, Rm.#313B	Boston	MA	02081	**********	(617) 722-1222 Field (508)668-6511
TM	St. Pierre, Larry	President	Attleboro Land Trust		Attleboro	MA	02703		
MHN	Stewart, Raymond	Town Planner	Town of Swansea	Town Hall, 68 Stevens Road	Swansea	MA	02777	**********	(508) 324-6730; F(508)324-6707
MHN	Sullivan, David	State Rep. aid: Brian Pearson	Comm. of Mass.	Field Office: 799 Main Street	Fall River	MA	02720		Field (508) 676-1008
MHN	Swanzey, Greg	Ex.Director	Schooner Ernestina	PO Box 2010 New Bedford State Pier	New Bedford	MA	02741	swanzey@ultranet.com	W(508)992-4900 F(508)984-7719
MHN	Traves, Heidi	Water Resources	Rhode Island DEM	235 Promenade Street	Providence	RI	02908	htravers@dem.state.ri.us	(401)222-4700 x7613 F(401)521-4230
MHN	Webster, David	Director of Engineering & Highway Services	Town of Swansea	101 Gardners Neck Road	Swansea	MA	02777		(508)678-5615; FAX 678-5655
TM	Wick, Connie	Membership	TMRWA	PO Box 1386	North Attleborough	MA	02760	shadeplant@mediaone.net	
TM	Zingarelli, Richard	citizen	TMRWA	Bank Street	Attleboro	MA	02703	Richard.Zingarelli@state.ma.us	W(617)626-1406

*TM = Ten Mile; MHN = Mount Hope/Narragansett

Appendix C: Major River Segments

Ten Mile River Watershed (52)

RIVER SEGMENT	MUNICIPALITY	SIZE (Miles)	DATE SURVEYED	QUALITY CLASS	WBID #	IMPAIRED? 303(d)List	POLLUTANTS
Ten Mile River					5233625		
Headwaters to W. Bacon St.	Plainville	1.6	1987,1990, 1997 (DEP,2000)	B/WWF	MA 52-01	Y	Metals
W. Bacon St. to North Attleborough WWTP	Plainville, North Attleborough	4.3	1997 (DEP, 2000)	B/WWF	MA 52-02	Y	Metals, Nutrients, Pathogens
	Plainville, North Attleborough	2.2	1997 (DEP, 2000)	B	MA 52-09 5233775	N	
North Attleborough WWTP to Attleboro WWTP	North Attleborough to Attleboro	7.9	1984,1990,1997 (DEP, 2000)	B/WWF	MA52-03	Y	Unknown toxicity; Metals, Nutrients, Organic enrichment/Low D. O. Pathogens
Speedway (Thatcher) Brook	Attleboro	0.9	1984,1990,1997 (DEP, 2000)	B/WWF	MA 52-05 5233725	Y	Metals, Nutrients, Organic enrichment/Low D.O. Pathogens
Attleboro WWTP to MA/RI border near Central Ave., Seekonk	Attleboro, Seekonk	7.6	1984,1990,1997 (DEP, 2000)	B/WWF	MA 52-04	Y	Unknown toxicity; Metals, Nutrients, Organic enrichment/Low D.o. Pathogens
Bungay River							
Outlet of Witch Pond to Inlet of Greenwood Lake	Mansfield, North Attleborough				----	N	N/A
Outlet of Greenwood Lake to confluence w/ Ten Mile River	North Attleborough to Attleboro	4.0	1997 (DEP, 2000)	B/WWF	MA 52-06	N	N/A
Seven Mile River					5233675		
Headwaters to Inlet of Orrs Pond	Attleboro	3.0	1984,1991,1997 (DEP, 2000)	A	MA 52-07	Y	Pathogens
Four Mile River - Outlet of Manchester Reservoir to Inlet of Orrs Pond	Attleboro	0.9	1997 (DEP, 2000)	A	MA 52-10 5233700	N	
Seven Mile River -Outlet of Orrs Pond to confluence w/ Ten Mile River	Attleboro, Pawtucket, RI	3.0	1990,1997 (DEP,2000)	B/WWF	MA 52-08	Y	Pathogens
Coles Brook - Headwaters to inlet at Central Pond	Rehoboth, Seekonk	4.3	1999 (Fennessey, 1999)	B	MA 52-11 5233650	N	

Appendix D: Lakes and Impoundments

Ten Mile River Watershed (52)

NAME	MUNICIPALITY	SIZE (ACRES)	DATE SURVEYED*	WATER QUALITY CLASS	PALIS#	IMPAIRED ? 303(d)List	POLLUTANTS
Black Pond	North Attleborough	5	--	B	52001	N	
Blackinton(Simons) Pond	Attleboro		1995 (Attleboro, 1995)		--		
Briggs Corner Pond	Attleboro	5	--	B	52002	N	
Cargill Pond	Plainville	5	1997(DEP, 2000)	B	52004	N	
Cemetery Pond	Swansea	5	--	B	52005	N	
Central Pond	Seekonk/Pawtucket/ E. Providence, RI	139	1997 (DEP, 2000)	B	52006	Y	Nutrients; noxious plants
Chestnut Street Pond	Plainville	10	1997(DEP, 2000)	B	52007	N	
Dodgeville Pond	Attleboro	47	1981, 1997 (DEP, 2000) 1999 (ACT, Inc., 2000)	B	52011	Y	Nutrients; pathogens
East Fuller Street Pond	Plainville	5	--	B	52012	N	
Fall's Pond, Upper (Coral Lake)	North Attleborough	62	1997 (DEP, 2000)	B	52013	Y	Nutrients; noxious plants
Fall's Pond, Lower	North Attleborough	60	1997 (DEP, 2000)	B	52014	N	
Farmers Pond	Attleboro	9	1981, 1997(DEP, 2000)1999 (ACT, Inc., 2000)	B	52015	Y	Nutrients; noxious plants
Fuller Pond	Plainville	4	1997 (DEP, 2000)	B	52016	N	
Greenwood (Bungay) Lake	Mansfield/North Attleborough	153	1997 (DEP, 2000)	B	52017	N	
Hebron Pond	Attleboro	6	--	B	52019	N	
Hebronville Pond (Ten Mile River Pond)	Attleboro	16	1997 (DEP, 2000)	B	52020	N	
Hoppin Hill Reservoir	North Attleborough	30	1997 (DEP, 2000)	A	52021	N	
Hoppin Hill Reservoir, North	North Attleborough	10	--	B	52028	N	
James V. Turner Reservoir	Seekonk/E. Providence, RI	124	1997 (DEP, 2000)1999 (ACOE, 2000)	B	52022	Y	Nutrients; noxious plants
Lake Como	Attleboro/North Attleborough	5	2000 (ACOE)1997 (DEP, 2000)	B	52010	N	
Ledgemont Pond	Seekonk	8	--	B	52023	N	
Luther Reservoir	Attleboro/North Attleborough	12	1997 (DEP, 2000)	A	52025	N	
Manchester Pond Reservoir	Attleboro	218	1997 (DEP, 2000)	A	52026	N	

* For full citation see Bibliography

Appendix D: Lakes and Impoundments
Ten Mile River Watershed (52)

NAME	MUNICIPALITY	SIZE (ACRES)	DATE SURVEYED*	WATER QUALITY CLASS	PALIS#	IMPAIRED ? 303(d)List	POLLUTANTS
Mechanics Pond	Attleboro	9	1981, 1997 (DEP, 2000)1999 (ACT, Inc., 2000)	B	52027	Y	Nutrients; pathogens
Orrs Pond (City Pond, Upper Pond, Orrs Reservoir)	Attleboro	48	1997 (DEP, 2000)	A	52029	N	
Pawtucket Pond	Seekonk/ Pawtucket, RI	30	--	B	52030	N	
Peck Pond	North Attleborough	4	--		52031	N	
Plain Street Pond	Mansfield	15	1997 (DEP, 2000)	B	52032	N	
Plainville Pond	Plainville	4	--	B	52033	N	
Stanley Street Pond	North Attleborough	5	--	B	52035	N	
Sturdy Pond	North Attleborough	8	--	B	52036	N	
Ten Mile River Pond	Seekonk	7	--	B	52038	N	
Tiffany Street Pond (Attleboro Gravel Pit No. 1)	Attleboro	19	1997 (DEP, 2000)	B	52044	N	
Towne Street Pond (St Mary's Pond)	North Attleborough	6	--	B	52039	N	
Wetherell's Pond	Plainville	13	1997 (DEP, 2000)	A	52041	N	
Whiting Pond	North Attleborough / Plainville	21	1997 (DEP, 2000)	A	52042	N	

* For full citation see Bibliography

Appendix D: Lakes and Impoundments

Ten Mile River Watershed (52)

NAME	MUNICIPALITY	SIZE (ACRES)	DATE SURVEYED*	WATER QUALITY CLASS	PALIS#	IMPAIRED ? 303(d)List	POLLUTANTS
Black Pond	North Attleborough	5	--	B	52001	N	
Blackinton(Simons) Pond	Attleboro		1995 (Attleboro, 1995)		--		
Briggs Corner Pond	Attleboro	5	--	B	52002	N	
Cargill Pond	Plainville	5	1997(DEP, 2000)	B	52004	N	
Cemetery Pond	Swansea	5	--	B	52005	N	
Central Pond	Seekonk/Pawtucket/ E. Providence, RI	139	1997 (DEP, 2000)	B	52006	Y	Nutrients; noxious plants
Chestnut Street Pond	Plainville	10	1997(DEP, 2000)	B	52007	N	
Dodgeville Pond	Attleboro	47	1981, 1997 (DEP, 2000) 1999 (ACT, Inc., 2000)	B	52011	Y	Nutrients; pathogens
East Fuller Street Pond	Plainville	5	--	B	52012	N	
Fall's Pond, Upper (Coral Lake)	North Attleborough	62	1997 (DEP, 2000)	B	52013	Y	Nutrients; noxious plants
Fall's Pond, Lower	North Attleborough	60	1997 (DEP, 2000)	B	52014	N	
Farmers Pond	Attleboro	9	1981, 1997(DEP, 2000)1999 (ACT, Inc., 2000)	B	52015	Y	Nutrients; noxious plants
Fuller Pond	Plainville	4	1997 (DEP, 2000)	B	52016	N	
Greenwood (Bungay) Lake	Mansfield/North Attleborough	153	1997 (DEP, 2000)	B	52017	N	
Hebron Pond	Attleboro	6	--	B	52019	N	
Hebronville Pond (Ten Mile River Pond)	Attleboro	16	1997 (DEP, 2000)	B	52020	N	
Hoppin Hill Reservoir	North Attleborough	30	1997 (DEP, 2000)	A	52021	N	
Hoppin Hill Reservoir, North	North Attleborough	10	--	B	52028	N	
James V. Turner Reservoir	Seekonk/E. Providence, RI	124	1997 (DEP, 2000)1999 (ACOE, 2000)	B	52022	Y	Nutrients; noxious plants
Lake Como	Attleboro/North Attleborough	5	2000 (ACOE)1997 (DEP, 2000)	B	52010	N	
Ledgemont Pond	Seekonk	8	--	B	52023	N	
Luther Reservoir	Attleboro/North Attleborough	12	1997 (DEP, 2000)	A	52025	N	
Manchester Pond Reservoir	Attleboro	218	1997 (DEP, 2000)	A	52026	N	

* For full citation see Bibliography

Appendix D: Lakes and Impoundments
Ten Mile River Watershed (52)

NAME	MUNICIPALITY	SIZE (ACRES)	DATE SURVEYED*	WATER QUALITY CLASS	PALIS#	IMPAIRED ? 303(d)List	POLLUTANTS
Mechanics Pond	Attleboro	9	1981, 1997 (DEP, 2000)1999 (ACT, Inc., 2000)	B	52027	Y	Nutrients; pathogens
Orrs Pond (City Pond, Upper Pond, Orrs Reservoir)	Attleboro	48	1997 (DEP, 2000)	A	52029	N	
Pawtucket Pond	Seekonk/ Pawtucket, RI	30	--	B	52030	N	
Peck Pond	North Attleborough	4	--		52031	N	
Plain Street Pond	Mansfield	15	1997 (DEP, 2000)	B	52032	N	
Plainville Pond	Plainville	4	--	B	52033	N	
Stanley Street Pond	North Attleborough	5	--	B	52035	N	
Sturdy Pond	North Attleborough	8	--	B	52036	N	
Ten Mile River Pond	Seekonk	7	--	B	52038	N	
Tiffany Street Pond (Attleboro Gravel Pit No. 1)	Attleboro	19	1997 (DEP, 2000)	B	52044	N	
Towne Street Pond (St Mary's Pond)	North Attleborough	6	--	B	52039	N	
Wetherell's Pond	Plainville	13	1997 (DEP, 2000)	A	52041	N	
Whiting Pond	North Attleborough / Plainville	21	1997 (DEP, 2000)	A	52042	N	

* For full citation see Bibliography

Appendix E: Dam Study Recommendations

Summary of
Hydrology and Hydraulic Analysis Prepared by DEM Office of Dam Safety
January 04, 2001

Dam	Location	Hazard Rating	Hydraulically Adequate	Recommendations
Fuller	Plainville	N/A	N/A	
Wetheralls	Plainville	Low	Not Adequate	Protect downstream power station Repair dam, earthen berm, and secondary bypass stream.
Whitings	North Attleborough	High	Not Adequate	Repair eroding banks that threaten tanks at downstream factory
Falls Pond	North Attleborough	High	Not Adequate	Protect industry immediately downstream on a restricted channel; Actively manage taintor gates during flood events; Coordinate flood control efforts with Attleboro
Mechanics Pond	Attleboro	High (to be revised as Low)	Not Adequate	Adequate storage nearby to support downgrading the hazard rating
Dodgeville	Attleboro	Significant	Not Adequate	Encourage landowner to repair bridge over dam and to permanently remove stoplogs.
Greenwood (Bungay) Lake	North Attleborough	High	Adequate	

Watershed-wide Recommendations:

Encourage dam owners to rebuild or repair dams failing to meet applicable design storm and hydraulic capacity

Construct floodwalls or dikes for businesses likely to remain at current site and for industries using hazardous or water reactive chemicals.

Reduce rate of runoff at selected locations through the construction of stormwater detention ponds and offering financial incentives.

Purchase and remove abandoned industrial facilities, paved areas, and restore natural floodplain vegetation within the 100-year floodplain.

Remove or reconstruct flow constrictions such as deck bridges, exposed water mains, and storm and sanitary sewer crossings.

Install stormwater backflow preventors where needed

Relocate businesses within the 100-year floodplain through positive incentives

Upgrade zoning regulations to prevent additional development within the 100-year floodplain. Require mandatory purchase of floodplain insurance for all businesses and residential units.

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE DEPARTMENT
STATE HOUSE BOSTON 02133
(617) 727-3600

ARGEO PAUL CELLUCCI
Governor

JANE SWIFT
Lieutenant Governor

BY HIS EXCELLENCY

ARGEO PAUL CELLUCCI
GOVERNOR

EXECUTIVE ORDER NO 418

ASSISTING COMMUNITIES IN ADDRESSING THE HOUSING SHORTAGE

WHEREAS, the Commonwealth has enjoyed unprecedented economic growth and prosperity in the last decade;

WHEREAS, as an unfortunate consequence of this economic growth, in many of our communities there is a shortage of housing for individuals and families across a broad range of incomes; and

WHEREAS, to address the housing shortage, we need to encourage our cities and towns to create "community development plans" that identify locations for new housing opportunities while still preserving the unique character of their communities, and to

provide incentives to cities and towns to expand the supply of new housing;

NOW, THEREFORE, I, Argeo Paul Cellucci, Governor of the Commonwealth of Massachusetts, by virtue of the authority vested in me as Supreme Executive Magistrate, do hereby order as follows:

The "Community Development Plan" Program

Section 1. The Secretaries of The Executive Office of Environmental Affairs and the Executive Office of Transportation and Construction (the "Secretaries") and the Director of the Department of Housing and Community Development (the "Director"), collectively, shall develop and implement a two-year program to provide technical assistance and resources to cities and towns for the purpose of creating "community development plans." A "community development plan" is a comprehensive, strategic plan, for the future development of a city or town, and shall include, among other things, plans for:

A. where the community will create new housing opportunities;

B. where it will target commercial or industrial economic development (if any);

C. how it will improve its transportation infrastructure (or how its existing infrastructure will handle any growth); and

D. where and how it will preserve open space.

As part of this program, I hereby direct the Secretaries and the Director, through their respective secretariats and department, to provide assistance to any city or town seeking to create such a plan. Such assistance may include the provision of in-kind services or discretionary funds where appropriate. In no event shall the value of the services and funds provided to any individual city or town for this purpose exceed

$30,000. In developing the program, the Secretaries and the Director also shall assist cities arid towns seeking to create "regional development plans" that plan for new

housing and open space on a regional basis.

The Secretaries and the Director shall develop and implement this **program within** forty-five days of this Executive Order and shall report to the Governor every three months on its status. Such report shall include which cities and towns have received assistance and their progress in developing their respective plans.

Priority in Distribution of Discretionary Funds

Section 2. The Secretaries and the Director each shall develop and implement a program to give priority in awarding discretionary funds to those cities and towns that the Director of Housing and Community Development has determined are taking steps to increase the supply of housing for individuals and families across a broad range of

incomes. Such steps could include:

I. adopting revisions to local zoning or land use regulations that provide for more intensive housing development, such as, duplexes, accessory apartments, mixed uses of buildings or sites, or multi-family housing;

II. adopting incentive zoning provisions, such as density bonuses for deed-restricted units for low- and moderate-income households;

III. streamlining the housing permitting process;

IV. providing money or land to underwrite the cost of developing housing for low and moderate-income households; and

V. increasing the supply of housing for low- and moderate-income households by some percentage over existing levels.

As with the community development plans, the program also should include cities and towns that choose to adopt a regional approach to creating new housing opportunities.

Each program shall be developed and implemented within forty-five days of this Executive Order. The Secretaries and the Director shall provide the Governor with a description of the programs at the expiration of the 45-day period.

Given at the Executive Chamber
in Boston this 21't day of January
in the year two thousand.

Argeo Paul Cellucci
Governor

William Francis Galvin
Secretary of the Commonwealth

GOD SAVE THE COMMONWEALTH OF MASSACHUSETTS

Appendix G

Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Massachusetts Environmental Policy Act Office (MEPA)

By His Excellency WILLIAM F. WELD, GOVERNOR

EXECUTIVE ORDER No. 385 PLANNING FOR GROWTH

WHEREAS, the Citizens of the Commonwealth of Massachusetts have a constitutional "right to clean air and water . . . and the natural, scenic, historic, and aesthetic qualities of their environment" (hereafter "environmental quality and resources");
WHEREAS, the ability to enjoy, protect and preserve environmental quality and resources depends to an important degree on the economic well-being of the Commonwealth, and the ability to sustain long term economic well-being depends to an important degree on the protection and preservation of environmental quality and resources;
WHEREAS, conflict between environmental quality and economic activity ultimately puts at risk environmental resources as well as economic opportunity; thus threatening, for example, public water supplies, clean air, swimmable and fishable waters, flood protection, open space, agricultural lands, historic sites, and community character; but also affecting the timely provision of needed infrastructure, financial assistance and regulatory approvals for appropriately sited and designed development;
WHEREAS, such conflict can be avoided to a great extent through proactive and coordinated planning oriented towards both resource protection and sustainable economic activity, known as growth management; and
WHEREAS, in the absence of effective growth management, the burden of balancing economic development with resource protection is not spread equitably but falls disproportionately on proponents of the most recent development, as well as on communities lacking sufficient means to protect their resources and guide development;
NOW, THEREFORE, I, WILLIAM F. WELD, Governor of the Commonwealth of Massachusetts by virtue of the authority vested in me as Supreme Executive Magistrate, do hereby order as follow:

Declaration of Policy

Section 1. The Commonwealth shall actively promote sustainable economic development in the form of; a) economic activity and growth which is supported by adequate infrastructure and which does not result in, or contribute to, avoidable loss of environmental quality and resources, and b) infrastructure development designed to minimize the adverse environmental impact of economic activity.
Section 2. The dual objectives of resource protection and sustainable development shall be pursued as much as possible through means other than new rules and regulations, such as proactive planning, interagency coordination, incentives and assistance to interested private

parties as well as local and regional governments and organizations, and streamlining of regulatory processes so as to facilitate economic activity consistent with this policy.

Implementation

Section 3. All agencies, departments, boards, commissions, authorities and instrumentalities of the Commonwealth (hereafter "Agencies") shall evaluate the effect of their current regulations, policies, plans and practices on their and others' ability to facilitate sustainable economic development and to preserve environmental quality and resources, and shall adopt changes to the extent necessary to effectively contribute to the attainment of these objectives; provided that no such change shall infringe on the jurisdiction or authority of municipal, county, regional or Federal governments.

Section 4. All Agencies shall promote, assist, and discharge their duties with full consideration of local or regional growth management plans that have been formally accepted by the affected municipalities.

Section 5. All Agencies shall promote, assist and pursue the rehabilitation and revitalization of infrastructure, structures, sites, and areas previously developed and still suitable for economic (re)use. Such rehabilitation and revitalization, where practicable, shall be deemed preferable over construction of new facilities or development of areas with significant value in terms of environmental quality and resources, unless otherwise provided and supported by local or regional growth management plans.

Section 6. Agencies responsible for planning, funding, constructing or permitting infrastructure facilities such as transportation, water supply, waste water treatment and disposal, and solid waste management facilities, shall actively engage in the development of regional infrastructure plans, if not already in place, in coordination with other agencies and with local and regional planning entities.

Section 7. Agencies responsible for siting, designing, funding, constructing or permitting of infrastructure projects, public facilities or private development shall seek to minimize unnecessary loss or depletion of environmental quality and resources that might result from such activity and shall, as part of each final funding or permitting decision, make an express finding as to the consistency of such decision with the provisions of this Order.

Section 8. The Executive Office of Environmental Affairs shall consider the consistency of Agency actions with the provisions of this Order in its review of any project requiring the filing of an Environmental Notification Form pursuant to the Massachusetts Environmental Policy Act.

Section 9. Each Agency affected by this Order shall, within one year following the date of this Order and thereafter on an annual basis, report on the status and effectiveness of its compliance with this Order. Such reports shall be noticed and made available for public comment and review.

Section 10. The Secretary of the Executive Office of Environmental Affairs shall, within six months following the date of this Order, issue a guidance document for use by the Agencies in preparing their annual reports pursuant to the preceding section; and shall, within six months following the due date for the Agencies' reports and loaned on a review of said reports and of public comments received, submit to me a summary report and recommendations for the continued implementation of this Order.

Given at the Executive Chamber in Boston this 23rd day of April in the year one thousand nine hundred and ninety-six. ***William F. Weld, Governor Commonwealth of Massachusetts William Francis Galvin Secretary of the Commonwealth GOD SAVE THE COMMONWEALTH OF MASSACHUSETTS***

Report of Land Use Statistics for Upper Ten Mile Watershed

Cropland:	122.0	01.6%
Pasture:	89.1	01.2%
Forest:	2800.5	37.8%
Wetland:	94.2	01.3%
Mining:	191.3	02.6%
Open Land:	284.0	03.8%
Recreation:	186.7	02.5%
Spectator:	72.4	01.0%
Water Based:	03.3	00.0%
Multi-Family:	99.8	01.3%
Res. < 1/4:	46.1	00.6%
Res. 1/4-1/2:	1945.6	26.3%
Res. > 1/2:	426.9	05.8%
Salt Wetland:	00.0	00.0%
Commercial:	293.0	04.0%
Industrial:	241.0	03.3%
Open Urban:	154.5	02.1%
Transport:	118.2	01.6%
Waste Disposal:	57.8	00.8%
Water:	173.0	02.3%
Woody Perennial:	02.9	00.0%
No Change:	00.0	00.0%

Land use Summary:

Agriculture:	211.1	02.9%
Forest:	2800.5	37.8%
Wetlands:	94.2	01.3%
Open land:	631.4	08.5%
Residential:	2518.5	34.0%
Commercial:	365.5	04.9%
Industrial:	490.1	06.6%
Transport:	118.2	01.6%
Water:	173.0	02.3%
Total Area	**7402.4**	

Total area in acres for all land uses = 7402.4

Estimate of the Area of Impervious Cover

The impervious area is 979.8 acres

This makes the **percentage of imperviousness 13.2%**

Please note this is an estimate based on a combination of literature
and limited verification comparing the land use map to ortho photos.
If absolute accuracy is desired calibration to a specific area
is required.

Estimate of Annual Nonpoint Source Pollution Loads

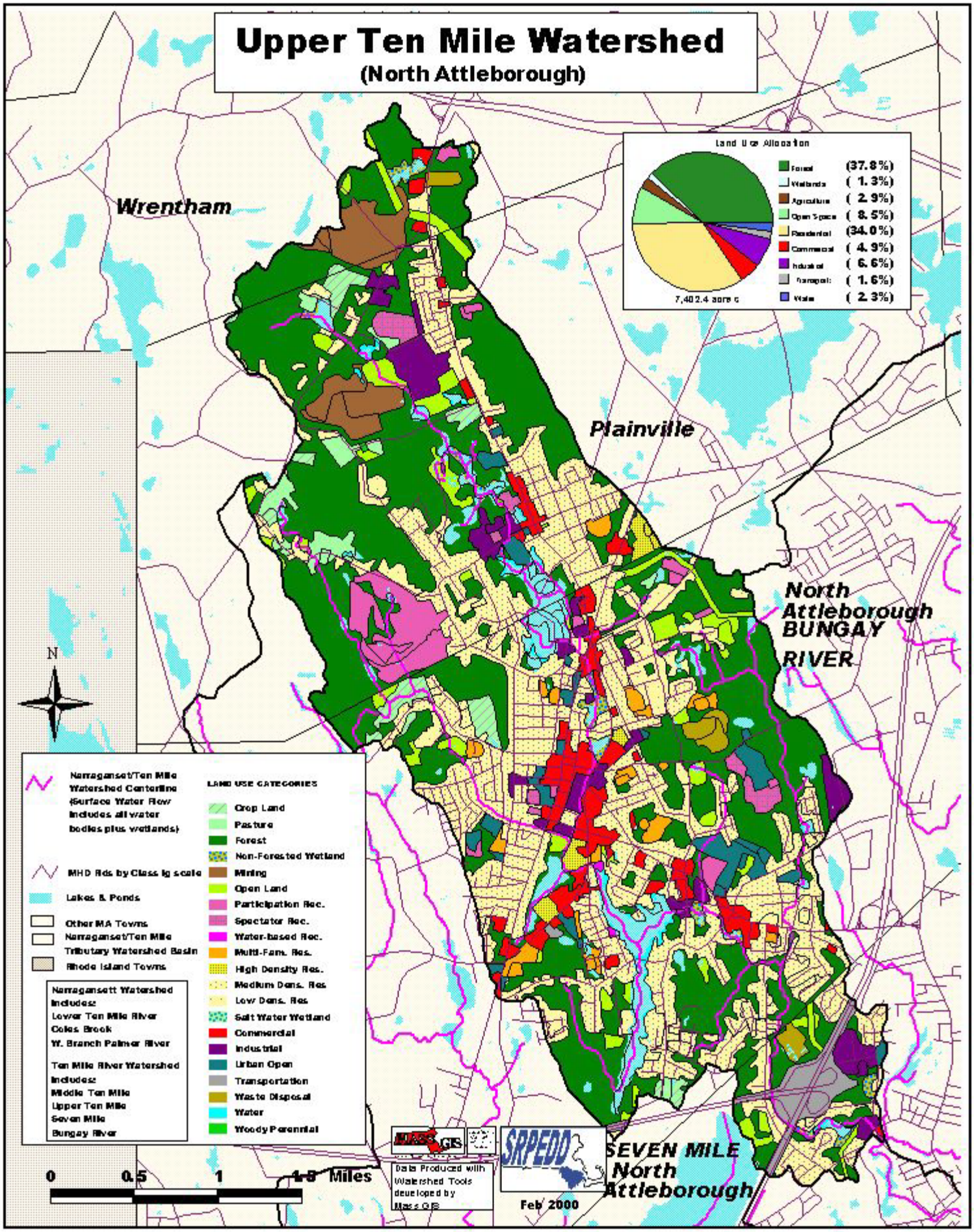
Estimated Nonpoint Source Pollution loads based on Landuse

Average Annual Nitrogen Load =	43626.7	pounds
Average Annual Phosphorus Load =	6988.1	pounds
Average Annual Suspended Solids Load =	1826634.3	pounds

These Estimates are based on the Watershed Management Model.
They are estimates of the amount of contamination generated by the
distribution of land use in an average year. Real loads vary greatly
from year to year and season to season.

Observed loads tend to be much lower then these estimates for two reasons.
NO mitigating factors are considered. No in stream assimilation, No BMPs.
The larger the area, the more natural assimilation should take place.
Also few observations are made during the most dramatic storm events. Thus
observed loadings tend to be biased away from nonpoint source events.

THESE RESULTS SHOULD BE USED TO COMPARE AREAS OF SIMILAR SIZE AND PHYSIOGRAPHY.


Upper Ten Mile Watershed
(North Attleborough)
Land Use Allocation
Forest (37.8%)
Wetlands (1.3%)
Agriculture (2.9%)
Open Space (8.5%)
Residential (34.0%)
Commercial (4.9%)
Industrial (6.6%)
Transport (1.6%)
Water (2.3%)
7,402.4 acres
Wrentham
Plainville
North Attleborough
BUNGAY RIVER
SEVEN MILE
North Attleborough
N
Narragansett/Ten Mile Watershed Centerline (Surface Water Flow Includes all water bodies plus wetlands)
MHD Rds by Class lg scale
Lakes & Ponds
Other MA Towns
Narragansett/Ten Mile Tributary Watershed Basin
Rhode Island Towns
Narragansett Watershed Includes:
Lower Ten Mile River
Coles Brook
W. Branch Palmer River
Ten Mile River Watershed Includes:
Middle Ten Mile
Upper Ten Mile
Seven Mile
Bungay River
LAND USE CATEGORIES
Crop Land
Pasture
Forest
Non-Forested Wetland
Mining
Open Land
Participation Rec.
Spectator Rec.
Water-based Rec.
Multi-Fam. Res.
High Density Res.
Medium Dens. Res
Low Dens. Res
Salt Water Wetland
Commercial
Industrial
Urban Open
Transportation
Waste Disposal
Water
Woody Perennial
0 0.5 1 1.5 Miles
MASS GIS
Data Produced with Watershed Tools developed by MassGIS
SRPEDD
Feb 2000

Report of Land Use Statistics for the Middle Ten Mile Watershed

Cropland:	112.5	01.8%
Pasture:	32.9	00.5%
Forest:	2379.5	37.2%
Wetland:	120.2	01.9%
Mining:	47.4	00.7%
Open Land:	388.9	06.1%
Recreation:	210.4	03.3%
Spectator:	70.5	01.1%
Water Based:	00.0	00.0%
Multi-Family:	92.3	01.4%
Res. < 1/4:	429.2	06.7%
Res. 1/4-1/2:	1179.2	18.4%
Res. > 1/2:	432.3	06.8%
Salt Wetland:	00.0	00.0%
Commercial:	177.7	02.8%
Industrial:	339.9	05.3%
Open Urban:	242.5	03.8%
Transport:	49.7	00.8%
Waste Disposal:	02.1	00.0%
Water:	91.9	01.4%
Woody Perennial:	00.0	00.0%
No Change:	00.0	00.0%

Land use Summary:		
Agriculture:	145.4	02.3%
Forest:	2379.5	37.2%
Wetlands:	120.2	01.9%
Open land:	841.8	13.2%
Residential:	2132.9	33.3%
Commercial:	248.2	03.9%
Industrial:	389.5	06.1%
Transport:	49.7	00.8%
Water:	91.9	01.4%
Total Area	**6399.1**	

Total area in acres for all land uses = 6399.1

Estimate of the Area of Impervious Cover

The **impervious area is 1006.9 acres**

This makes the **percentage of imperviousness 15.7%**

Please note this is an estimate based on a combination of literature
and limited verification comparing the land use map to ortho photos.
If absolute accuracy is desired calibration to a specific area
is required.

Estimate of Annual Nonpoint Source Pollution Loads

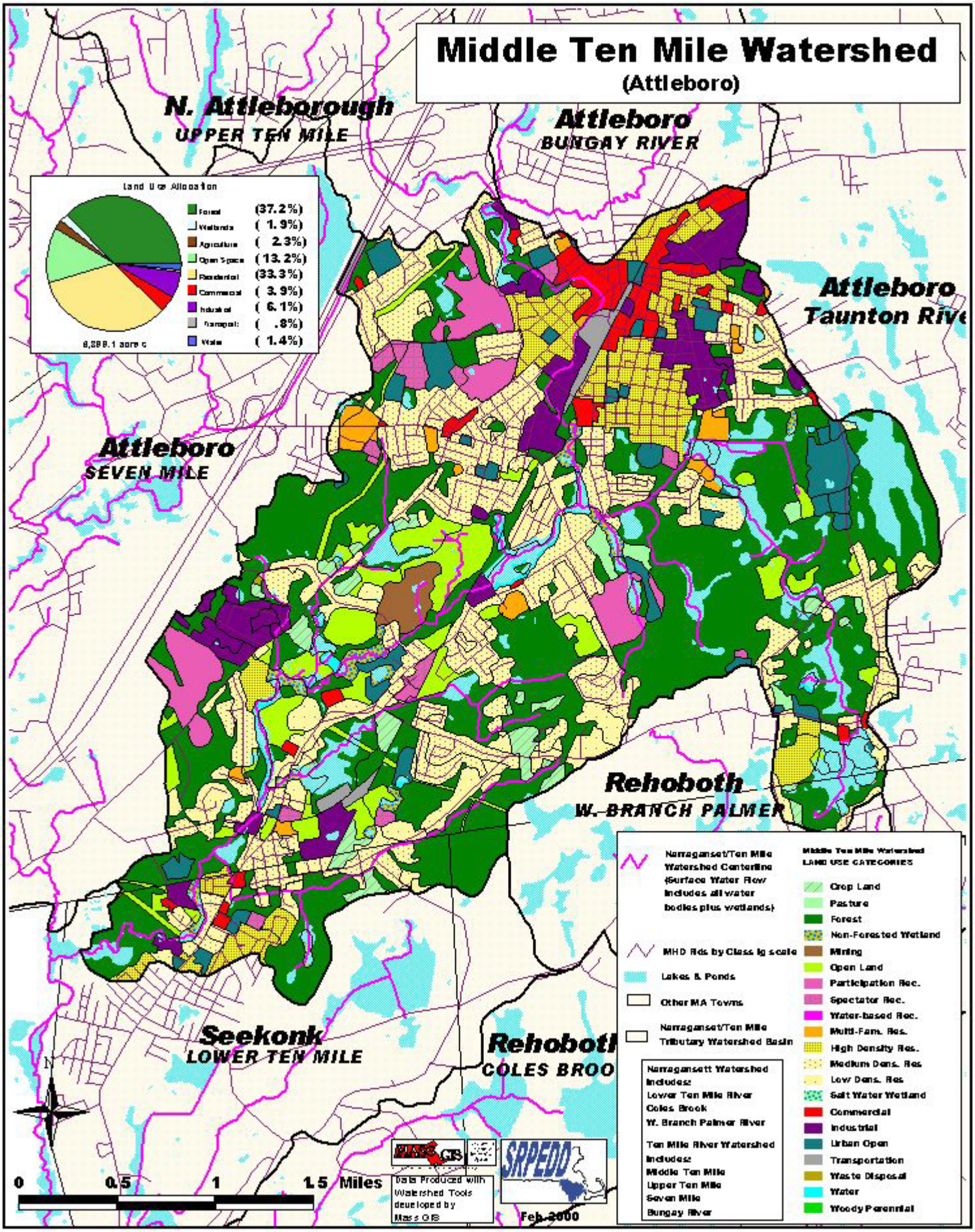
Estimated Nonpoint Source Pollution loads based on Landuse

Average Annual Nitrogen Load = 38794.0 pounds
Average Annual Phosphorus Load = 6173.9 pounds
Average Annual Suspended Solids Load = 1610597.2 pounds

These Estimates are based on the Watershed Management Model.
They are estimates of the amount of contamination generated by the
distribution of land use in an average year. Real loads vary greatly
from year to year and season to season.

Observed loads tend to be much lower then these estimates for two reasons.
NO mitigating factors are considered. No in stream assimilation, No BMPs.
The larger the area, the more natural assimilation should take place.
Also few observations are made during the most dramatic storm events. Thus
observed loadings tend to be biased away from nonpoint source events.

THESE RESULTS SHOULD BE USED TO COMPARE AREAS OF SIMILAR SIZE AND PHYSIOGRAPHY.


Middle Ten Mile Watershed
(Attleboro)
N. Attleborough
UPPER TEN MILE
Attleboro
BUNGAY RIVER
Attleboro
Taunton Rive
Attleboro
SEVEN MILE
Rehoboth
W. BRANCH PALMER
Seekonk
LOWER TEN MILE
Rehoboth
COLES BROO
Land Use Allocation
Forest (37.2%)
Wetlands (1.9%)
Agriculture (2.3%)
Open Space (13.2%)
Residential (33.3%)
Commercial (3.9%)
Industrial (6.1%)
Transport (.8%)
Water (1.4%)
8,288.1 acres
Narragansett/Ten Mile Watershed Centerline (Surface Water Flow includes all water bodies plus wetlands)
MHD Rds by Class lg scale
Lakes & Ponds
Other MA Towns
Narragansett/Ten Mile Tributary Watershed Basin
Narragansett Watershed Includes:
Lower Ten Mile River
Coles Brook
W. Branch Palmer River
Ten Mile River Watershed Includes:
Middle Ten Mile
Upper Ten Mile
Seven Mile
Bungay River
Middle Ten Mile Watershed
LAND USE CATEGORIES
Crop Land
Pasture
Forest
Non-Forested Wetland
Mining
Open Land
Participation Rec.
Spectator Rec.
Water-based Rec.
Multi-Fam. Res.
High Density Res.
Medium Dens. Res.
Low Dens. Res.
Salt Water Wetland
Commercial
Industrial
Urban Open
Transportation
Waste Disposal
Water
Woody Perennial
0
0.5
1
1.5 Miles
MassGIS
SRPEDD
Data Produced with Watershed Tools developed by MassGIS
Feb 2000

Report of Land Use Statistics for Lower Ten Mile Watershed

Cropland:	38.1	01.5%
Pasture:	38.6	01.6%
Forest:	958.4	38.6%
Wetland:	50.1	02.0%
Mining:	16.1	00.6%
Open Land:	249.2	10.0%
Recreation:	92.5	03.7%
Spectator:	19.4	00.8%
Water Based:	00.0	00.0%
Multi-Family:	01.9	00.1%
Res. < 1/4:	242.9	09.8%
Res. 1/4-1/2:	293.1	11.8%
Res. > 1/2:	212.0	08.5%
Salt Wetland:	00.0	00.0%
Commercial:	43.5	01.8%
Industrial:	51.9	02.1%
Open Urban:	33.4	01.3%
Transport:	06.8	00.3%
Waste Disposal:	53.3	02.1%
Water:	55.2	02.2%
Woody Perennial:	23.7	01.0%
No Change:	00.0	00.0%

Land use Summary:		
Agriculture:	76.8	03.1%
Forest:	958.4	38.6%
Wetlands:	50.1	02.0%
Open land:	398.7	16.1%
Residential:	749.9	30.2%
Commercial:	63.0	02.5%
Industrial:	121.3	04.9%
Transport:	06.8	00.3%
Water:	55.2	02.2%
Total Area	**2480.2**	

Total area in acres for all land uses = 2480.2

Estimate of the Area of Impervious Cover

The **impervious area is 300.0 acres**

This makes the percentage of imperviousness 12.1%

Please note this is an estimate based on a combination of literature
and limited verification comparing the land use map to ortho photos.
If absolute accuracy is desired calibration to a specific area
is required.

Estimate of Annual Nonpoint Source Pollution Loads

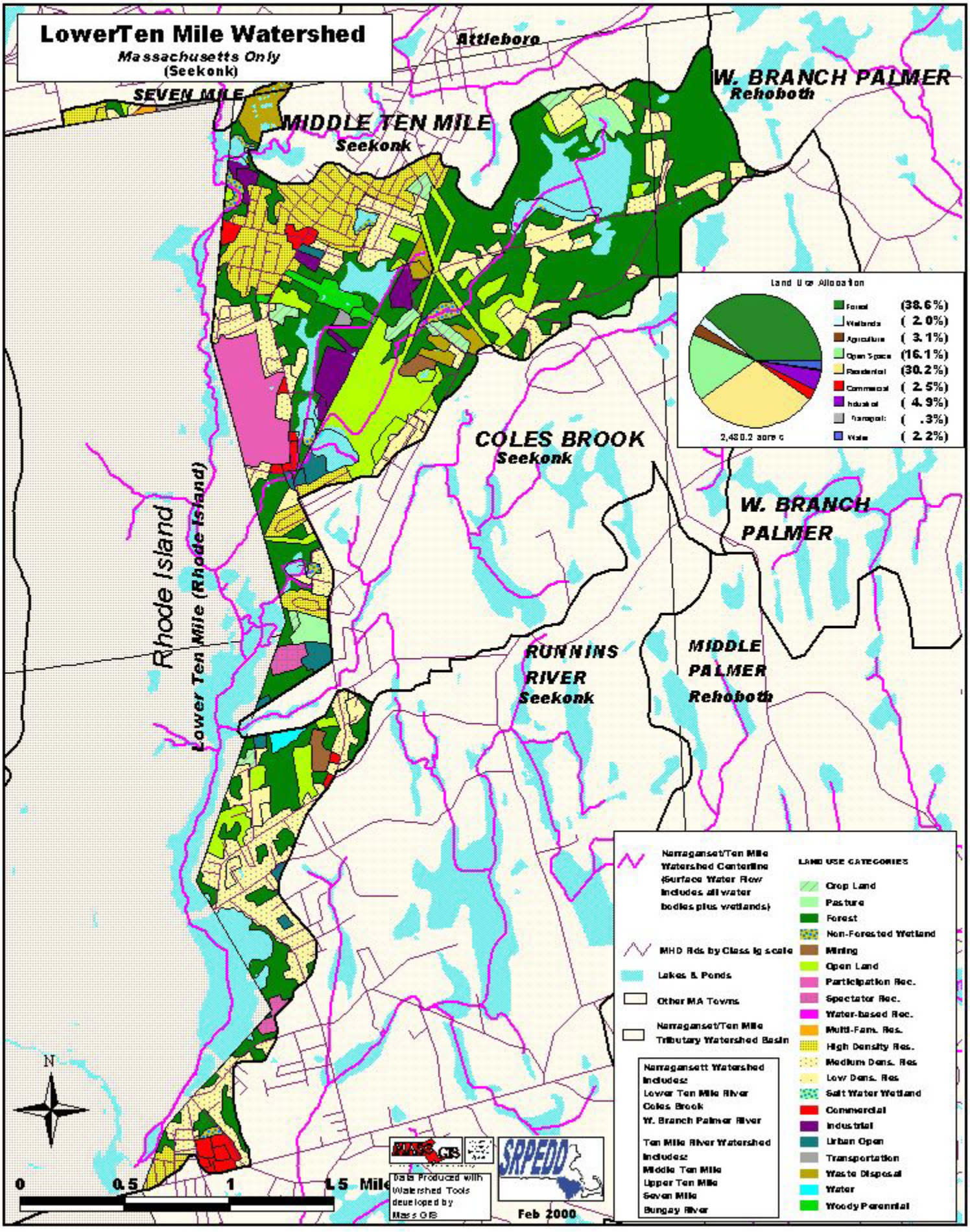
Estimated Nonpoint Source Pollution loads based on Landuse

Average Annual Nitrogen Load =	13087.5	pounds
Average Annual Phosphorus Load =	2044.4	pounds
Average Annual Suspended Solids Load =	518445.5	pounds

These Estimates are based on the Watershed Management Model.
They are estimates of the amount of contamination generated by the
distribution of land use in an average year. Real loads vary greatly
from year to year and season to season.

Observed loads tend to be much lower then these estimates for two reasons.
NO mitigating factors are considered. No in stream assimilation, No BMPs.
The larger the area, the more natural assimilation should take place.
Also few observations are made during the most dramatic storm events. Thus
observed loadings tend to be biased away from nonpoint source events.

THESE RESULTS SHOULD BE USED TO COMPARE AREAS OF SIMILAR SIZE AND PHYSIOGRAPHY.


LowerTen Mile Watershed
Massachusetts Only
(Seekonk)
Attleboro
SEVEN MILE
MIDDLE TEN MILE
Seekonk
W. BRANCH PALMER
Rehoboth
Land Use Allocation
Forest (38.6%)
Wetlands (2.0%)
Agriculture (3.1%)
Open Space (16.1%)
Residential (30.2%)
Commercial (2.5%)
Industrial (4.9%)
Transport (.3%)
Water (2.2%)
2,480.2 acres
COLES BROOK
Seekonk
W. BRANCH
PALMER
Rhode Island
Lower Ten Mile (Rhode Island)
RUNNINS
RIVER
Seekonk
MIDDLE
PALMER
Rehoboth
Narragansett/Ten Mile Watershed Centerline (Surface Water Flow includes all water bodies plus wetlands)
MHD Rds by Class lg scale
Lakes & Ponds
Other MA Towns
Narragansett/Ten Mile Tributary Watershed Basin
Narragansett Watershed includes:
Lower Ten Mile River
Coles Brook
W. Branch Palmer River
Ten Mile River Watershed includes:
Middle Ten Mile
Upper Ten Mile
Seven Mile
Bungay River
LAND USE CATEGORIES
Crop Land
Pasture
Forest
Non-Forested Wetland
Mining
Open Land
Participation Rec.
Spectator Rec.
Water-based Rec.
Multi-Fam. Res.
High Density Res.
Medium Dens. Res.
Low Dens. Res.
Salt Water Wetland
Commercial
Industrial
Urban Open
Transportation
Waste Disposal
Water
Woody Perennial
N
0
0.5
1
1.5 Miles
MASSGIS
Data Produced with Watershed Tools developed by MassGIS
SRPEDD
Feb 2000

Report of Land Use Statistics for Bungay River Watershed

Cropland:	64.1	01.3%
Pasture:	24.1	00.5%
Forest:	1842.6	38.1%
Wetland:	168.2	03.5%
Mining:	154.0	03.2%
Open Land:	221.4	04.6%
Recreation:	15.4	00.3%
Spectator:	23.1	00.5%
Water Based:	10.1	00.2%
Multi-Family:	25.9	00.5%
Res. < 1/4:	70.4	01.5%
Res. 1/4-1/2:	1078.3	22.3%
Res. > 1/2:	382.4	07.9%
Salt Wetland:	00.0	00.0%
Commercial:	47.2	01.0%
Industrial:	202.3	04.2%
Open Urban:	172.8	03.6%
Transport:	201.3	04.2%
Waste Disposal:	00.0	00.0%
Water:	125.1	02.6%
Woody Perennial:	09.9	00.2%
No Change:	00.0	00.0%

Land use Summary:		
Agriculture:	88.3	01.8%
Forest:	1842.6	38.1%
Wetlands:	168.2	03.5%
Open land:	429.6	08.9%
Residential:	1556.9	32.2%
Commercial:	70.3	01.5%
Industrial:	356.3	07.4%
Transport:	201.3	04.2%
Water:	125.1	02.6%
Total Area	**4838.5**	

Total area in acres for all land uses = 4838.5

Estimate of the Area of Impervious Cover

The **impervious area is 613.2 acres**

This makes the **percentage of imperviousness 12.7%**

Please note this is an estimate based on a combination of literature and limited verification comparing the land use map to ortho photos. If absolute accuracy is desired calibration to a specific area is required.

Estimate of Annual Nonpoint Source Pollution Loads

Estimated Nonpoint Source Pollution loads based on Landuse

Average Annual Nitrogen Load =	27627.5	pounds
Average Annual Phosphorus Load =	4420.9	pounds
Average Annual Suspended Solids Load =	1157230.4	pounds

These Estimates are based on the Watershed Management Model.
They are estimates of the amount of contamination generated by the distribution of land use in an average year. Real loads vary greatly from year to year and season to season.

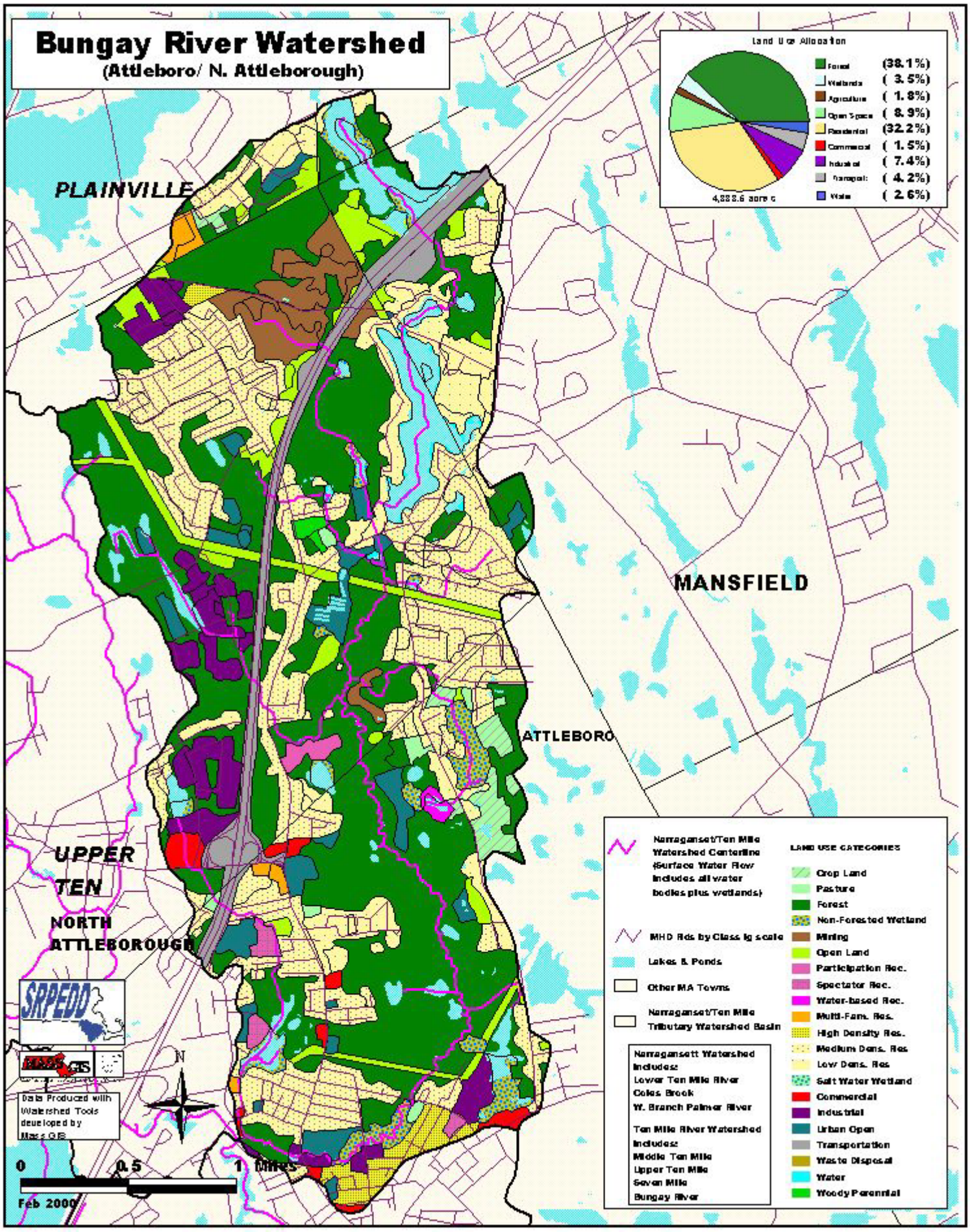
Observed loads tend to be much lower then these estimates for two reasons.

NO mitigating factors are considered. No in stream assimilation, No BMPs.

The larger the area, the more natural assimilation should take place.

Also few observations are made during the most dramatic storm events. Thus observed loadings tend to be biased away from nonpoint source events.

THESE RESULTS SHOULD BE USED TO COMPARE AREAS OF SIMILAR SIZE AND PHYSIOGRAPHY.


Bungay River Watershed
(Attleboro/ N. Attleborough)
Land Use Allocation
Forest (38.1%)
Wetlands (3.5%)
Agriculture (1.8%)
Open Space (8.9%)
Residential (32.2%)
Commercial (1.5%)
Industrial (7.4%)
Transport (4.2%)
Water (2.6%)
4,333.6 acres
PLAINVILLE
MANSFIELD
ATTLEBORO
UPPER TEN
NORTH ATTLEBOROUGH
Narragansett/Ten Mile Watershed Centerline (Surface Water Flow Includes all water bodies plus wetlands)
MHD Rds by Class lg scale
Lakes & Ponds
Other MA Towns
Narragansett/Ten Mile Tributary Watershed Basin
Narragansett Watershed Includes:
Lower Ten Mile River
Coles Brook
W. Branch Palmer River
Ten Mile River Watershed Includes:
Middle Ten Mile
Upper Ten Mile
Seven Mile
Bungay River
LAND USE CATEGORIES
Crop Land
Pasture
Forest
Non-Forested Wetland
Mining
Open Land
Participation Rec.
Spectator Rec.
Water-based Rec.
Multi-Fam. Res.
High Density Res.
Medium Dens. Res
Low Dens. Res.
Salt Water Wetland
Commercial
Industrial
Urban Open
Transportation
Waste Disposal
Water
Woody Perennial
SRPEDD
MASS GIS
Data Produced with Watershed Tools developed by Mass GIS
N
0
0.5
1 Miles
Feb 2000

Report of Land Use Statistics for Seven Mile Watershed

Cropland:	677.3	08.5%
Pasture:	85.4	01.1%
Forest:	3320.5	41.7%
Wetland:	149.3	01.9%
Mining:	44.7	00.6%
Open Land:	696.0	08.7%
Recreation:	65.3	00.8%
Spectator:	25.9	00.3%
Water Based:	00.0	00.0%
Multi-Family:	14.5	00.2%
Res. < 1/4:	50.8	00.6%
Res. 1/4-1/2:	1028.8	12.9%
Res. > 1/2:	500.6	06.3%
Salt Wetland:	00.0	00.0%
Commercial:	228.9	02.9%
Industrial:	90.3	01.1%
Open Urban:	161.9	02.0%
Transport:	429.1	05.4%
Waste Disposal:	18.6	00.2%
Water:	366.4	04.6%
Woody Perennial:	04.3	00.1%
No Change:	00.0	00.0%

Land use Summary:

Agriculture:	762.7	09.6%
Forest:	3320.5	41.7%
Wetlands:	149.3	01.9%
Open land:	927.4	11.7%
Residential:	1594.8	20.0%
Commercial:	254.8	03.2%
Industrial:	153.5	01.9%
Transport:	429.1	05.4%
Water:	366.4	04.6%
Total Area	**7958.6**	

Total area in acres for all land uses = 7958.6

Estimate of the Area of Impervious Cover

The **impervious area is 876.9 acres**

This makes the **percentage of imperviousness 11.0%**

Please note this is an estimate based on a combination of literature and limited verification comparing the land use map to ortho photos.
If absolute accuracy is desired calibration to a specific area is required.

Estimate of Annual Nonpoint Source Pollution Loads

Estimated Nonpoint Source Pollution loads based on Landuse

Average Annual Nitrogen Load =	37897.9 pounds
Average Annual Phosphorus Load =	5955.4 pounds
Average Annual Suspended Solids Load =	733003.8 pounds

These Estimates are based on the Watershed Management Model.
They are estimates of the amount of contamination generated by the distribution of land use in an average year. Real loads vary greatly from year to year and season to season.

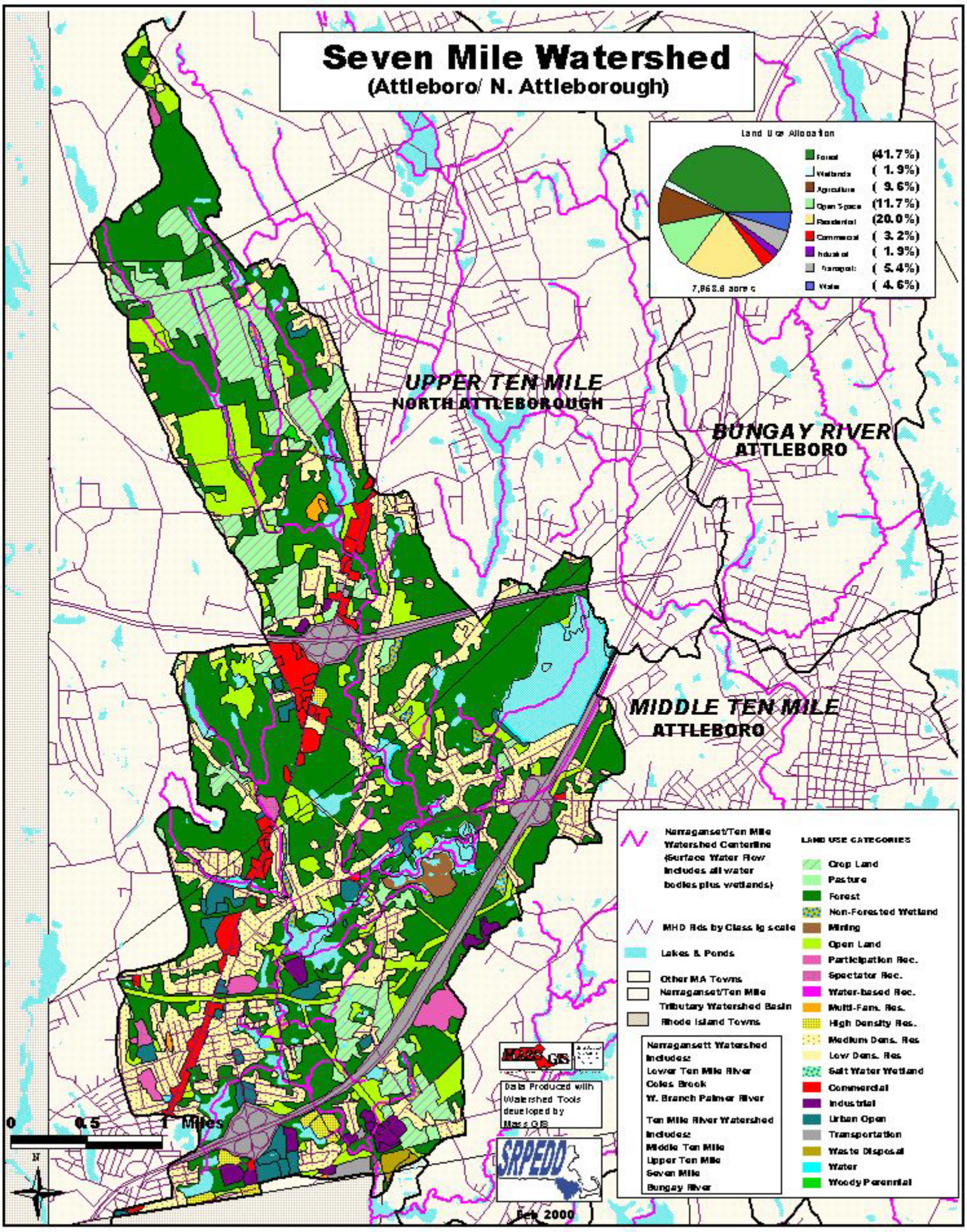
Observed loads tend to be much lower then these estimates for two reasons.

NO mitigating factors are considered. No in stream assimilation, No BMPs.

The larger the area, the more natural assimilation should take place.

Also few observations are made during the most dramatic storm events. Thus observed loadings tend to be biased away from nonpoint source events.

THESE RESULTS SHOULD BE USED TO COMPARE AREAS OF SIMILAR SIZE AND PHYSIOGRAPHY.


Seven Mile Watershed
(Attleboro/ N. Attleborough)
Land Use Allocation
Forest (41.7%)
Wetlands (1.9%)
Agriculture (9.6%)
Open Space (11.7%)
Residential (20.0%)
Commercial (3.2%)
Industrial (1.9%)
Transport (5.4%)
Water (4.6%)
7,963.8 acres
UPPER TEN MILE
NORTH ATTLEBOROUGH
BUNGAY RIVER
ATTLEBORO
MIDDLE TEN MILE
ATTLEBORO
Narragansett/Ten Mile Watershed Centerline (Surface Water Flow includes all water bodies plus wetlands)
MHD Rds by Class lg scale
Lakes & Ponds
Other MA Towns
Narragansett/Ten Mile Tributary Watershed Basin
Rhode Island Towns
Narragansett Watershed includes:
Lower Ten Mile River
Coles Brook
W. Branch Palmer River
Ten Mile River Watershed includes:
Middle Ten Mile
Upper Ten Mile
Seven Mile
Bungay River
LAND USE CATEGORIES
Crop Land
Pasture
Forest
Non-Forested Wetland
Mining
Open Land
Participation Rec.
Spectator Rec.
Water-based Rec.
Multi-Fam. Res.
High Density Res.
Medium Dens. Res
Low Dens. Res
Salt Water Wetland
Commercial
Industrial
Urban Open
Transportation
Waste Disposal
Water
Woody Perennial
MassGIS
Data Produced with Watershed Tools developed by MassGIS
SRPEDD
Feb 2000
0
0.5
1 Miles
N

Report of Land Use Statistics for Coles Brook Watershed

Cropland:	85.5	04.2%
Pasture:	63.8	03.1%
Forest:	1271.9	62.7%
Wetland:	56.8	02.8%
Mining:	00.0	00.0%
Open Land:	85.6	04.2%
Recreation:	133.9	06.6%
Spectator:	05.7	00.3%
Water Based:	00.0	00.0%
Multi-Family:	00.0	00.0%
Res. < 1/4:	16.3	00.8%
Res. 1/4-1/2:	86.3	04.3%
Res. > 1/2:	177.7	08.8%
Salt Wetland:	00.0	00.0%
Commercial:	00.0	00.0%
Industrial:	00.0	00.0%
Open Urban:	21.3	01.1%
Transport:	02.8	00.1%
Waste Disposal:	05.2	00.3%
Water:	17.1	00.8%
Woody Perennial:	00.0	00.0%
No Change:	00.0	00.0%

Land use Summary:		
Agriculture:	149.3	07.4%
Forest:	1271.9	62.7%
Wetlands:	56.8	02.8%
Open land:	240.8	11.9%
Residential:	280.4	13.8%
Commercial:	05.7	00.3%
Industrial:	05.2	00.3%
Transport:	02.8	00.1%
Water:	17.1	00.8%
Total Area	**2030.0**	

Total area in acres for all land uses = 2030.0

Estimate of the Area of Impervious Cover

The **impervious area is 59.2 acres**

This makes the **percentage of imperviousness 2.9%**

Please note this is an estimate based on a combination of literature
and limited verification comparing the land use map to ortho photos.
If absolute accuracy is desired calibration to a specific area
is required.

Estimate of Annual Nonpoint Source Pollution Loads

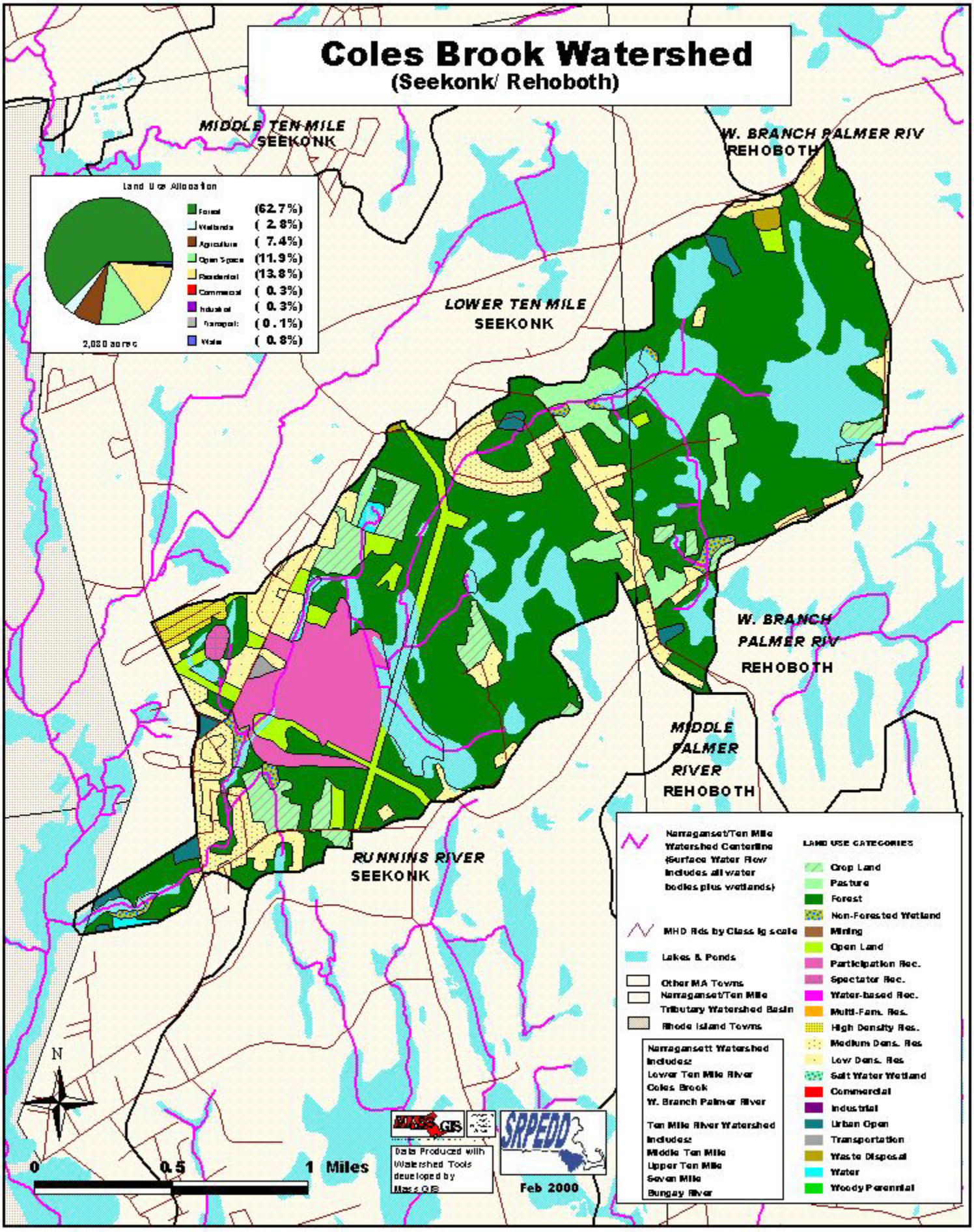
Estimated Nonpoint Source Pollution loads based on Landuse

Average Annual Nitrogen Load =	7465.4	pounds
Average Annual Phosphorus Load =	881.0	pounds
Average Annual Suspended Solids Load =	230879.3	pounds

These Estimates are based on the Watershed Management Model.
They are estimates of the amount of contamination generated by the distribution of land use in an average year. Real loads vary greatly from year to year and season to season.

Observed loads tend to be much lower then these estimates for two reasons.
NO mitigating factors are considered. No in stream assimilation, No BMPs.
The larger the area, the more natural assimilation should take place.
Also few observations are made during the most dramatic storm events. Thus observed loadings tend to be biased away from nonpoint source events.

THESE RESULTS SHOULD BE USED TO COMPARE AREAS OF SIMILAR SIZE AND PHYSIOGRAPHY.


Coles Brook Watershed
(Seekonk/ Rehoboth)
MIDDLE TEN MILE
SEEKONK
W. BRANCH PALMER RIV
REHOBOTH
Land Use Allocation
Forest (62.7%)
Wetlands (2.8%)
Agriculture (7.4%)
Open Space (11.9%)
Residential (13.8%)
Commercial (0.3%)
Industrial (0.3%)
Transport (0.1%)
Water (0.8%)
2,030 acres
LOWER TEN MILE
SEEKONK
W. BRANCH
PALMER RIV
REHOBOTH
MIDDLE
PALMER
RIVER
REHOBOTH
RUNNINS RIVER
SEEKONK
Narragansett/Ten Mile Watershed Centerline (Surface Water Flow includes all water bodies plus wetlands)
MHD Rds by Class lg scale
Lakes & Ponds
Other MA Towns
Narragansett/Ten Mile Tributary Watershed Basin
Rhode Island Towns
Narragansett Watershed includes:
Lower Ten Mile River
Coles Brook
W. Branch Palmer River
Ten Mile River Watershed includes:
Middle Ten Mile
Upper Ten Mile
Seven Mile
Bungay River
LAND USE CATEGORIES
Crop Land
Pasture
Forest
Non-Forested Wetland
Mining
Open Land
Participation Rec.
Spectator Rec.
Water-based Rec.
Multi-Fam. Res.
High Density Res.
Medium Dens. Res.
Low Dens. Res.
Salt Water Wetland
Commercial
Industrial
Urban Open
Transportation
Waste Disposal
Water
Woody Perennial
N
0
0.5
1 Miles
Data Produced with Watershed Tools developed by MassGIS
SRPEDD
Feb 2000

Appendix J: Bibliography
For the
Ten Mile River Watershed

Prepared by
EOEA Ten Mile River Watershed Team
Watershed Action Plan Subcommittee

Documents in bold have been reviewed for the development of the WAP

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Appendix K: Non-point Source Pollution Action Strategies

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

Nonpoint Source Action Strategy
Ten Mile River Basin

Final Version May 4, 2001

Lauren A. Liss, Commissioner

Glenn Haas, Acting Assistant Commissioner
Bureau of Resource Protection

Steven McCurdy, Acting Director
Division of Municipal Services

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Compiled By: Jeffrey Brownell, Nonpoint Source Program Coordinator, SERO

TEN MILE RIVER WATERSHED

Waterbody	Segment	Miles	303d	Impairment	Other Issues
Ten Mile River	MA52-01	1.6	Y	Metals	
Outlet of Cargill Pond to W.Bacon St., Plainville					
Recommended NPS Actions					**Source**
Mitigate silt plumes in Fuller Pond					EOEA, FY '01
Investigate stormwater compliance at sand & gravel operation upstream of Fuller Pond					DEP '97
Stabilize streambank erosion at Fuller St.					DEP '97
Fecal monitoring					DEP '97
Review WMA registration compliance Plainville & N. Attleborough.					DEP '97
IMPLEMENTED ACTIONS					

Waterbody	Segment	Miles	303d	Impairment	Other Issues
Ten Mile River	MA52-02	4.8	Y	Metals, nutrients & pathogens	
W.Bacon St.,Plainville to North Attleborough WWTP					
Recommended NPS Actions					**Source**
Mitigate silt plumes					EOEA, FY '01
Review WMA registration compliance N. Attleborough.					DEP '97
Sediment sampling behind impoundments for dredging feasibility.					DEP '97
Reduce sediment deposition from roads and parking lots @ W. Bacon St., Plainville.					DEP '97
Outreach to property owners to encourage implementing buffers.					DEP '97
Additional fecal monitoring.					DEP '97
IMPLEMENTED ACTIONS					

Waterbody	Segment	Miles	303d	Impairment	Other Issues
Scotts Brook	MA52-09	2.2	N		
Headwaters north of High St., N. Attleborough to confluence of Ten Mile River, N. Attleboro					
Recommended NPS Actions					**Source**
Conduct further assessment of causes of low flow.					DEP '97
IMPLEMENTED ACTIONS					

Waterbody	Segment	Miles	303d	Impairment	Other Issues
Ten Mile River	MA52-03	8.6	Y	Metals, nutrients & pathogens, unknown toxicity, organic enrichment, low D.O.	

North Attleborough WWTP to Pawtucket, RI border

Recommended NPS Actions	Source
Mitigate silt plumes	EOEA, FY '01
Fecal monitoring.	DEP '97
Reduce sediment inputs from road runoff at both Cedar & Freeman Streets.	DEP '97
More D.O. monitoring.	DEP '97
Need erosion controls and buffer improvement at Tiffany Street Bridge area.	DEP '97
Reduce sediment inputs from sand & gravel operation.	DEP '97
Quantify sedimentation from parking lots on Central Ave. and implement BMPs.	DEP '97
Additional sediment sampling behind impoundments.	DEP '97
Review WMA registration compliance at Mantrose-Hauser.	DEP '97

IMPLEMENTED ACTIONS

Waterbody	Segment	Miles	303d	Impairment	Other Issues
Bungay River	MA52-06	4	N		

Outlet of Greenwood Lake, North Attleborough to confluence of Ten Mile River, Attleboro

Recommended NPS Actions	Source
Scrutinize existing and proposed WMA withdrawals	DEP '97
Conduct shoreline NPS survey	DEP '97
Reduce waterfowl at Blackinton Pond	DEP '97

IMPLEMENTED ACTIONS

Waterbody	Segment	Miles	303d	Impairment	Other Issues
Speedway Brook	MA52-05	0.9	Y	Metals, nutrients & pathogens, organic enrichment, low D.O.	

Headwaters, Attleboro to confluence of Ten Mile River, Attleboro

Recommended NPS Actions	Source
Review WMA registration compliance for Texas Instruments, Inc	DEP '97
Ensure Texas Instruments compliance with stormwater permit	DEP '97
Conduct fecal monitoring	DEP '97

IMPLEMENTED ACTIONS

Waterbody	Segment	Miles	303d	Impairment	Other Issues
Seven Mile River	MA52-07	3	Y	Metals, nutrients & pathogens, organic enrichment, low D.O.	Class "A" waters

Outlet of Hoppin Hill Reservoir, N.Attleborough to outlet of Orrs Pond, Attleboro

Recommended NPS Actions	Source
Review City of Attleboro WMA compliance and limits	DEP '97
Investigate fecal problem	DEP '97

IMPLEMENTED ACTIONS

Waterbody	Segment	Miles	303d	Impairment	Other Issues
Four mile Book	MA52-10	0.9	N		Class "A"

Outlet of Manchester Pond reservoir, Attleboro to inlet Orrs Pond

Recommended NPS Actions	Source
NPS education to area residents	DEP '97
Fecal monitoring	DEP '97

IMPLEMENTED ACTIONS

Waterbody	Segment	Miles	303d	Impairment	Other Issues
Seven Mile River	MA52-08	3	Y	pathogens	

Outlet of Orrs Pond, Attleboro to confluence with Ten Mile River in Pawtucket, RI

Recommended NPS Actions	Source
Educate residents about nps issues.	DEP '97
Fecal monitoring.	DEP '97
Craft, Inc applied for a renewed stormwater permit and reported pH ranged between 3.0-4.5 S.U.	DEP '97

IMPLEMENTED ACTIONS

Waterbody	Segment	Miles	303d	Impairment	Other Issues
Coles Brook	MA-5211	4.3	N		
Headwaters, west of Allens Lane, Rehoboth to inlet Central Pond, Seekonk					

Recommended NPS Actions	Source
Conduct additional wet and wet weather monitoring at the 9 sampling sites.	UMASS-Dartmouth, 1999
Enlist volunteers to conduct water quality monitoring using established QAPP	UMASS-Dartmouth, 1999
Incorporate DNA fingerprinting or ribotyping into bacterial analysis to distinguish bacteria source(s).	UMASS-Dartmouth, 1999
Fecal monitoring	DEP '97
Determine causes of low flow	DEP '97
Review WMA compliance for Seekonk	DEP '97
Review WMA compliance for Ledgemont Country club	DEP '97

IMPLEMENTED ACTIONS

Waterbody	Segment	Miles	303d	Impairment	Other Issues
Whitings Pond	52-042	21 acres	N		
N. Attleborough/Plainville border					

Recommended NPS Actions	Source
Install 3 stormwater leaching galleries on the west side of the pond.	ACT Inc. and Fugro East, Inc.'96
Conduct annual monitoring program for phosphorus and water clarity	ACT Inc. and Fugro East, Inc.'96
Investigate unnamed stream trib to Ten Mile river downstream of Wetherells Pond for high phosphorus and bacteria	DEP '97
Investigate 10,000 fc/100 ml from hose at house on RT 1, sampling station # Rt 1 S-b	DEP '97
Investigate sewage smell at the outlet area of pond	DEP '97
Sample stormwater discharges that directly enter the pond	DEP '97
Investigate inputs to the stormdrain system on west side of pond	DEP '97

IMPLEMENTED ACTIONS

Waterbody	Segment	Miles	303d	Impairment	Other Issues
Blackinton Pond	not assigned	.95 acres	N		Sand, salt, oil & silts from stormwater, shallowness, erosion, large pop. waterfowl, herbicides & pesticides from cemetary,minor algae blooms

Impoundment of Bungay River, west of Rt. 152, Attleboro

Recommended NPS Actions	Source
Improve stormwater quality from 11 catch basin system that discharges to pond	Watershed Mgt. Plan '95
Increase depth of pond	DEP '97
Control excessive waterfowl population	DEP '97
Restore bank erosion	DEP '97
Repair retaining wall (erosion problem) on east end (private property)	DEP '97

IMPLEMENTED ACTIONS

Waterbody	Segment	Miles	303d	Impairment	Other Issues
Farmers Pond Attleboro	MA 52015	9 acres	Y	Nutrients, noxious aquatic plants	Control expansion of purple loosestrife

Recommended NPS Actions	Source
Institute BMPs related to lawn care, cleaning products, pet waste, buffer areas and septic system maintenance.	ACT INC.,'00
City should increase street sweeping and catch basin cleaning.	ACT INC.,'00
Provide educational brochures to residents.	ACT INC.,'00

IMPLEMENTED ACTIONS

Waterbody	Segment	Miles	303d	Impairment	Other Issues
Dodgeville Pond Attleboro	MA 52011	47 acres	Y	Nutrients, pathogens	

Recommended NPS Actions	Source
Institute BMPs related to lawn care, cleaning products, pet waste, buffer areas and septic system maintenance.	ACT INC.,'00
City should increase street sweeping and catch basin cleaning.	ACT INC.,'00
Provide educational brochures to residents.	ACT INC.,'00

IMPLEMENTED ACTIONS

Waterbody	Segment	Miles	303d	Impairment	Other Issues
Mechanics Pond Attleboro	MA 52027	9 acres	Y	Nutrients, pathogens	

Recommended NPS Actions	Source
Reduce phosphorus loading	ACT INC.,'00
Residents should institute BMPs related to lawn care, cleaning products, pet waste, buffer areas and septic system maintenance.	ACT INC.,'00
City should increase street sweeping and catch basin cleaning.	ACT INC.,'00
Provide educational brochures to residents.	ACT INC.,'00

IMPLEMENTED ACTIONS

Waterbody	Segment	Miles	303d	Impairment	Other Issues
Ten Mile River Watershed	Basin-wide				

Recommended NPS Actions	Source
Identify and minimize nonpoint source pollution	EOEA, FY '01

IMPLEMENTED ACTIONS

Watershed wide NPS assessment will be conducted in 2001

REFERENCES

EOEA, FY '01	Massachusetts Executive Office of Environmental Affairs (EOEA) Watershed Team Work plan, Fiscal Year 2001
DEP '97	Ten Mile River Basin 1997 Water Quality Assessment Report 52-AC-1, Massachusetts Department of Environmental Protection (MADEP), March 2000
303 (d)	Final Massachusetts Section 303(d) List of Waters, 1998, Massachusetts Department of Environmental Protection (MADEP), February 1999
UMASS-Dartmouth, 1999	Assessment of NPS pollution in Coles Brook, University of Massachusetts (UMASS)-Dartmouth for MA EOEA, 1999
ACT Inc. and Fugro East, Inc.'96	Diagnostic Water Quality Assessment for Whitings Pond, North Attleborough, MA, Aquatic Control Technology, Inc. and Fugro East, Inc. March 1996
Watershed Mgt. Plan '95	Blackinton Pond Watershed Management Plan, City of Attleboro, Department of Planning and Land Use, December 1995
ACT INC.,'00	Biological Survey for Farmers, Mechanics and Dodgeville Ponds, October 2000, Aquatic Control Technology, Inc.

Appendix L: Federal and State Grants Available for Watershed Work

Funding Opportunities from State Agencies for Environmental Projects*

Executive Office of Environmental Affairs (EOEA)

Watershed Initiative: Watershed Stewardship Program

Contact: John Clarkeson (617) 626-1159

Summary: EOEA seeks proposals from qualified organizations, as an independent contractor, that accomplish one or more of the following objectives as stated in the Open Space Bond. These are 1) restoration of sites; 2) research 3) environmental improvements; 4) recreational improvements. Each proposed activity must meet one or more of these objectives. The Watershed Stewardship Program, administered by the Massachusetts Watershed Initiative (MWI), is intended to support these objectives in the context of the Initiative. The MWI focuses on creating strong partnerships among state and federal agencies, municipalities, local boards, businesses, watershed and civic associations, regional planning agencies, citizens and others to restore and protect natural resources utilizing a watershed approach. EOEA may give preference to proposals which, in addition to providing the Commonwealth with the best value for the proposed project, also demonstrates the bidder's ability to develop or enhance its position as an organized, sustaining community partner for the Watershed Initiative.

Eligibility: 501 c(3) organizations, land trusts, conservation districts, counties, cities and towns, and other regional or local planning organizations.

Match: Projects must have a 1:1, dollar-for-dollar non-state match of the total state grant amount. In-kind services are eligible as a cost match..

$ Range Individual contracts of up to $50,000 will be awarded on a competitive basis. In fiscal year 2000 (July 1, 1999 to June 30, 2000) a total of $200,000 may be awarded. The contract shall last for a period of up to 2 years. The contract may be extended at the discretion of EOEA for up to two six month periods. Funding for Year 2 is contingent upon satisfactory completion of Year 1 tasks.

Schedule: RFR currently available. Responses due in the late fall.

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* **This funding list is a summary document, not a request for responses nor an amendment to any request for responses currently effective. All requests for responses are available on the internet at www.comm-pass.com.**

Watershed Initiative: Volunteer Monitoring Grants

Contact: John Clarkeson (617) 626-1159 or john.clarkeson@state.ma.us
Christian Krahforst (617) 626-1216 or christian.krahforst@state.ma.us

Summary: Grants are available to support volunteer groups which monitor inland and coastal systems; to coordinate these efforts with state priority projects under the MWI; and to gather information to support the protection and restoration of important aquatic habitats and natural resources. These funds may be used for marine, estuarine, and freshwater monitoring to better understand the environmental health of our state's 27 watersheds. There are two types of grant awards:

1) Volunteer Monitoring Grant - To aid in the start-up of volunteer monitoring or to support established volunteer monitoring groups currently active in environmental monitoring in Massachusetts. Grants are awarded based on detailed work plans including schedules for Quality Assurance Project Plan (QAPP) submission (where applicable). This grant may not be used solely for salaries or administrative costs. Outreach expenditures cannot exceed more than 15% of the total award.

2) Project Supply Grant - To purchase project supplies such as but not limited to field and sampling supplies, laboratory testing, and lab supplies.

Eligibility: Both types of volunteer monitoring grants are available to an IRS 501 (c) (3) certified nonprofit monitoring group as well as those monitoring groups organized by municipalities or public academic institutions relying on volunteers. Municipal or non-profit labs are also eligible for equipment grants if they submit a joint response with a cooperating volunteer monitoring group.

$ Range: Type 1 grant recipients may receive up to $5000.
Type 2 grant recipients may receive up to $2000.

Schedule: The RFR goes out periodically. Please call for more information.

Watershed Initiative/Planning for Growth: Communities Connected by Water Program

Contact: John Clarkeson: (617) 626-1175

Summary: The purpose of this program is to solicit projects that protect watershed resources and plan for sustainable growth. This program recognizes the inherent connection between the resource protection objectives of the Planning for Growth Program and the Watershed Initiative.

Eligibility: Watershed Initiative Segment: watershed organizations, 501 (c)(3) organizations, regional planning agencies, conservation districts, counties, and cities and towns. Planning for Growth Segment: regional planning

agencies acting on behalf of cities and towns, a group of municipalities acting through a lead community.

Match: Growth — Watershed Initiative Segment: 100%; at least 50% cash. Planning for Segment: 25%; cash or in-kind.

$ Range: Growth — Watershed Initiative Segment: contracts of up to $150,000. Planning for Segment: contracts of up to $100,000.

Examples: Two projects were funded from the 1998 grant round, "Planning for Growth and Watershed Protection in the Ipswich River Watershed" and "Looking Beyond Devens: Planning for the Future in the Nashua River Watershed Area".

Schedule: It is anticipated that the RFR for the 1999 offering will be issued in January 2000.

Watershed Inititive/Environmental Education: Outdoor Classroom Program

Contact: Melissa Griffiths (617) 626-1114

Summary: Each proposed activity should meet one or more of the following goals while promoting watershed and environmental education in the classroom. The goals, as defined by the Open Space Bond Bill are 1) restoration of sites; 2) research; 3) environmental improvements; 4) recreational improvements.

Match: Not required, but presence of match does strengthen application.

$ Range: Up to $1,500.

Examples: New program. None awarded to date.

Schedule: RFR is currently available. Applications will be accepted through March 1, 2000. Responses are currently reviewed on a monthly basis.

Planning for Growth Grants

Contact: Kurt Gaertner: (617) 626-1154

Summary: Comprehensive growth planning for cities and towns and development of regional policy plans.

Eligibility: Municipalities and regional planning agencies.

Match: 25%, can be cash or in-kind.

$ Range: Up to $100,000.

Examples: $80,000 to the towns of Buckland and Shelburne for the completion of an inter-municipal comprehensive plan. $50,000 to the Berkshire Regional Planning Commission and the Towns of Lee and Lenox for development of a sub-regional growth policy plan.

Schedule: Call for more information.

Wetlands Restoration and Banking Program

GROWetlands Grant Program

Contact: Christy Foote-Smith: (617) 292-5991

Summary: The program funds the implementation of "proactive" (not required by a permit or enforcement action) wetlands restoration projects. The program wishes to promote and support wetland restoration projects that have been identified and prioritized through the GROWetland Initiative, inventories it has conducted of degraded salt marshes, and watershed wetland restoration plans it has developed.

Eligibility: Applicants must be public entities, including counties, town authorities, regional government bodies, and any instrumentalities of government. The wetland restoration work to be performed must not be for the purpose of providing wetland mitigation required by a permit or enforcement action.

Match: A grant match is not required, but may result in a more competitive project since the proportion of cash and in-kind contributions toward the total project cost is a criterion for evaluation grant proposals.

$ Range: Although there is no maximum application amount, the total program funds are $100,000 annually. Proposals fall into two categories, but are judged equally : 1) under $50,000 and 2) over $50,000.

Examples: Fundable project costs include: 1) physical activities directly related to wetland restoration such as dredging, filling, ditching, mowing, installation of structures, excavation, planting, grading, and monitoring and 2) the purchase of materials such as culverts, tidegates, and other structures necessary to carry out a successful restoration.

Schedule: All application materials are reviewed by mid-winter annually. Call for more information.

Corporate Wetlands Resoration Program

Contact: Christy Foote-Smith: (617) 292-5991

Summary: This program is funded through a public/private partnership to restore wetlands. The program provides funds for wetland restoration projects to GROWetlands projects accepted the Wetlands Restoration and Banking Program (different from the GROWetlands Grant program). GROWetlands provides technical and other support to groups, agencies, individuals who are engaging in proactive wetland restoration. The program funds the implementation of "proactive" (not required by a permit or enforcement action) wetlands restoration projects.

Eligibility: Unlimited as to applicants. Must be project that meets WRBP's definition of "wetland restoration".

Match: A grant match is not required, but may result in a more competitive project since the proportion of cash and in-kind contributions toward the total project cost is a criterion for evaluation grant proposals.

$ Range: Unlimited.

Examples: Project activities include: 1) physical activities directly related to wetland restoration such as dredging, filling, ditching, mowing, installation of structures, excavation, planting, grading, and monitoring; 2) the purchase of materials such as culverts, tidegates, and other structures necessary to carry out a successful restoration; and 3) other activities directly related to wetland restoration such as project design and permitting.

Schedule: Applications are accepted year round.

Division of Conservation Services (DCS)

Self-Help Program

Contact: Jennifer Soper: (617) 626-1015

Summary: Funds for acquiring land for conservation and passive recreation purposes.

Eligibility: Municipal Conservation Commissions (A town must have an state approved Open Space and Recreation Plan to be eligible.)

Match: 52-70% grant of total project cost: level of funding dependent upon the equalized valuation per capita decile ranking of the community. Please note that this is a reimbursement program, not a matching grants program.

$ Range: Maximum Grant award amount is announced at the onset of each grant round by the Secretary of EOEA.

Examples: Award to Falmouth to purchase coastal pond property adjacent to larger conservation area.

Schedule: The application process begins in the spring with an application deadline of June 1. A new rolling grant round is in development and will be announced by the Secretary of EOEA.

Urban Self-Help Program

Contact: Joan Robes: (617) 626-1014

Summary: Funds for acquiring land for public outdoor recreation and/or the renovation or development of public outdoor park and recreation facilities.

Eligibility: Municipalities:. Town must have a state approved Open Space and Recreation Plan to be eligible.

Match: 52-70% grant of total project cost: level of funding dependent upon the equalized valuation per capita decile ranking of the community. Please note that this is a reimbursement program, not a matching grants program.

$ Range: Maximum Grant award amount is announced at the onset of each grant round by the Secretary of EOEA.

Examples: Funds to the City of Cambridge to convert Danehy Park from a 50-acre landfill to playing fields and open space. . A new rolling grant round is in development and will be announced by the Secretary of EOEA.

Schedule: The application process begins in the spring with an application deadline of June 1.

Massachusetts Environmental Trust

Environmental Grants

Contact: Robbin Peach: (617) 727-0249

Summary: The Trust funds projects that: (1) encourage cooperative efforts to raise environmental awareness, and (2) support innovative approaches that can protect and preserve our natural resources, with a special focus on water and related land resources.

Eligibility: Non-profit, community associations, civic groups, schools and institutions for higher education, municipalities, and state agencies.

Match: See individual program guidelines.

$ Range: See individual program guidelines.

Examples: Recipients have included the Coalition for Buzzards Bay, Springfield Science Museum, Pioneer Valley Planning Commission, Association for the Preservation of Cape Cod, and many others.

Schedule: The Trust's list of funding availability for FY00 is now available. All program guidelines are available on the Trust's web site. http://www.agmconnect.org/maenvtr1.html.

Office of Coastal Zone Management (CZM)

Coastal Pollutant Remediation (CPR) Program

Contact: Jason Burtner (617) 626-1214

Summary: Stormwater pollution and vessel pump-out grants.

Eligibility: The 221 Municipalities located within the Massachusetts coastal watersheds.

Match: 25% local match, cash or in-kind services

$ Range: No restrictions; past grants have ranged between $3,000 and $140,000.

Examples: Design and construction of a Best Management Practice structure to filter roadway runoff flowing through a storm drain; boat pump-outs.

Schedule: RFR released in late spring with deadline in summer.

Gulf of Maine Council on the Marine Environment

Non-Profit Organizations Coastal and Marine Environment Grants

Contact: Susan Snow-Cotter (617) 626-1202.

Summary: Grants to fund efforts to restore shellfish habitat, restore groundfish resources, identify effects of toxins in marine food chain, reduce marine debris, protect and restore regionally significant coastal habitat.

Eligibility: Nonprofit organizations (e.g. community assoc., civic groups, municipalities, education institutions) in Gulf of Maine Watershed which in Massachusetts extends from Salisbury to Nantucket. (Does not include Buzzards Bay towns.)

Match: 50% match requirement. (Half of the match must be in cash.)

$ Range: $1,000 - $10,000

Examples: Outreach materials to support marine debris education. Development of bilingual Citizen's Guide to Protecting Natural Resources of Boston Harbor.

Schedule: Depends on funding availability. Call for more information.

Department of Environmental Management (DEM)

Lake and Pond Grant Program

Contact: Steve Asen: (617) 626-1353

Summary: Lake and Pond protection, preservation, enhancement, and public access.

Eligibility: Municipalities; Co-applications are encouraged from Lake and Pond Associations or Districts, and Watershed Associations.

Match: 50% cash match.

$ Range: $1,000-$10,000

Examples: Controlling non-point pollution; eradicating non-native aquatic plant species, developing lake and watershed management plans.

Schedule: In past years, applications were mailed in October and the deadline was December 31. Call for more information.

Recreational Trails Program

Contact: Peter Brandenburg: (617) 626-1453

Summary: Construction and improvement of publicly accessible recreational trails.

Eligibility: Municipalities, nonprofit groups, and regional and state agencies.

Match: 20% minimum, in-kind permitted.

$ Range: $2000-$20,000, exceptions considered.

Examples: Trail building materials; support of volunteer trail maintenance activities.

Schedule: To be determined.

Greenways and Trails Demonstration Grants

Contact: Jennifer Howard: (413) 586-8706 X18; email jennifer.howard@state.ma.us

Summary: Innovative projects that advance the creation and promotion of greenway and trail networks throughout Massachusetts.

Eligibility: Municipalities, RPAs, and nonprofit organizations.

Match: None required, although encouraged including in-kind contributions.

$ Range: $1,000 - $5,000; up to $10,000 available for multi-town projects.

Examples: Improving access to rivers and trails, producing greenway and trail brochures, maps, signs, and curricula, and involving community members in greenway and trail planning and implementation.

Schedule: Applications are due in fall/winter each year - call for more information.

Coastal Access Grants Program

Contact: Geordie Vining: (617) 626-1398

Summary: Local and regional projects that improve and enhance the general public's recreational access to the coast.

Eligibility: Municipalities, RPAs, and nonprofit organizations.

Match: None required, although encouraged.

$ Range: Currently up to $5,000 per grant.

Examples: Develop a local public access plan, or a management plan for coastal property; develop a new coastal trail; enhance existing coastal access points; develop coastal access educational initiative.

Schedule: The application deadline is at the end of the calendar year, with awards announced 1-2 months later; projects and final reports must be completed by autumn. Call for exact dates and more information.

Urban Forest Planning and Education Grants

Contact: Phillip Rodbell: (617) 626-1466

Summary: Funds to build support for the protection and management of community trees and forest ecosystems.

Eligibility: Municipalities and nonprofit groups.

Match: 100%, in-kind allowed.

$ Range: Up to $10,000

Examples: Tree inventories that involve residents in data collection; hands-on training to students to observe, plant and care for trees; workshops and public awareness campaigns; urban environmental analysis (GIS).

Schedule: Applications are due in mid-April.

Heritage Tree Care

Contact: Edith Marka: (617) 626-1466

Summary: Funds for pruning and maintenance of large or historic public trees.

Match:

$ Range:

Eligibility: Municipalities and non-profit groups.

Schedule: Call for more information.

Mass ReLeaf Program

Contact: Edith Makra: (617) 626-1466

Summary: Funds the purchase of trees for community planting projects by developing partnerships between business, government, and nonprofit groups.

Eligibility: Municipalities, nonprofit groups, and community volunteer groups.

Match: 50%, usually in-kind services to plant and maintain trees.

$ Range: up to $5000

Examples: Tree planting to reduce energy use, curb the urban heat island effect, and offset urban pollution; educational and promotional events to expand volunteer networks and corporate partners.

Schedule: Grants in early spring and fall when available. Call for details.

Forest Stewardship Program

Contact: Edith Marka: (617) 626-1466

Summary: Grants to private forest landowners to protect forest ecosystems. Landowners, with assistance of DEM foresters, develop a forest stewardship plan for their property, which makes them eligible for Federal cost sharing funds to help carry out the plan.

Eligibility: Any forest landowner in Massachusetts, who meets the following criteria: ownership must be private, non-industrial, and non-profit; and size of forest land must be less than 1,000 acres in total in the State.

Match:

$ Range:

Examples: Forest stewardship plans and implementation can include any project which meets one of the 9 main goals, such as wildlife habitat management, erosion reduction, protection of endangered species, trail creation/maintenance, and timber quality improvement.

Schedule: Applications were due in March of past years. Call for more information.

Massachusetts Historic Landscape Preservation Grant Program

Contact: Katy Lacy: (617) 626-1379 or katy.lacy@state.ma.us

Summary: State-funded competitive grant program to support the preservation and restoration of historic landscapes listed or in certain instances eligible for listing on the National Register of Historic Places.

Eligibility: Applicants must be a municipality.

Match: The Program requires a municipal cash match of no less than 30 percent and no more than 48 percent of the total project.

$ Range: Up to $50,000 per year per project.

Examples: Inventory, planning and design activities include the survey of historic landscapes preservation of historic landscape reports, park user studies etc; construction activities include stabilization, protection, rehabilitation and restoration projects that are consistent with current planning documents; preservation maintenance activities include those cyclic maintenance activities that are essential to the long term protection and preservation of historic fabric and features of site; public education and stewardship activities include workshops, school programs, brochures, signage and interpretive elements.

Schedule: Call for more information.

Department of Environmental Protection (DEP)

Section 319 Nonpoint Source Pollution Grants

Contact: Beth McCann: (617) 292-5901

Summary: To control nonpoint sources of water pollution, particularly from agricultural lands, paved surfaces, and other areas where rainwater collects pollutants as it runs over the land.

Eligibility: Any interested public or private organization.

Match: 40% non-federal match of total project cost.

$ Range: $20,000 to $200,000

Examples: Bioengineering technique used to repair eroded streambank; development of outreach materials to educate about nonpoint pollution, innovative stormwater management techniques.

Schedule: An RFR is issued annually, around March 1, with proposals due to DEP around May 1. There is considerable lag time between applying for and receiving s319 funds. The RFR for Federal Fiscal Year 2000 will be available in March 1999 for projects that will be funded in 2000.

Massachusetts Clean Water State Revolving Fund Program

Contact: Steven McCurdy: (617) 292-5779

Summary: In an effort to provide incentive to communities to undertake projects with meaningful water quality and public health benefits, this program provides financial assistance to help municipalities and wastewater districts to comply with federal and state water quality requirements. The Program provides low-interest loans to finance water quality improvement projects, with particular emphasis on watershed management priorities.

Eligibility: Massachusetts municipalities and waste water districts.

Match:

$ Range: Minimum $100,000. Maximum applicants limited to 15-20% of annual program capacity. Annual capacity is approximately $150M to $200M.

Examples: Planning and construction of eligible projects, including new wastewater treatment facilities and upgrades of existing facilities; infiltration/inflow correction; wastewater collection systems; control of combined sewer overflows; and non-point source pollution abatement projects, such as landfill capping, community programs for upgrading septic systems (Title 5), and storm water remediation.

Schedule: Solicitation annually during the summer. Call for more information.

Massachusetts Drinking Water State Revolving Fund Program

Contact: Steven McCurdy: (617) 292-5779

Summary: In an effort to provide incentive to communities to undertake projects with meaningful public health benefits, this program provides financial assistance to help municipalities and public water suppliers to comply with federal and state Safe Drinking Water Act requirements. The Program provides low-interest loans to finance construction or improvement of water treatment facilities, as well as enhancement to distribution systems.

Eligibility: Massachusetts municipalities and community water systems with at least 15 residential connections.

Match:

$ Range: For calendar years 1998-2003, up to $400 million may be available through the loan program.

Examples: Projects include: New and upgraded drinking water treatment facilities; projects to replace contaminated sources, new water treatment, or storage facilities; consolidation or restructuring of water systems: project and system activities that provide treatment, or effective alternatives to treatment, for compliance with regulated health standards, such as the Surface Water Treatment Rule, installation or replacement of transmission or distribution systems.

Schedule: Applications are accepted annually in the late summer / early fall. Call for more information.

Section 604b Water Quality Management Planning Grants

Contact: Gary Gonyea: (617) 556-1152

Summary: Water quality assessment and management planning.

Eligibility: Regional public comprehensive planning organizations such as: regional planning agencies, councils of government, conservation districts, counties, and cities and towns.

Match: Match not required but proposals are enhanced by demonstration of local support.

$ Range: $30,000 to $60,000

Examples: Provide technical assistance to communities for water supply protection and assist local officials in comprehensive water resource planning.

Schedule: Request for Responses are typically issued by DEP each October for competitive projects with proposals due approximately six weeks later. Proposals are evaluated and funding is announced within two months of the proposal submission deadline. Generally, projects are expected to begin approximately eight months after the date of their selection by the Department.

Watershed Project Financing and Construction

Contact: Northeast Regional Contact:

Alan Slater (6 17) 292-5749 or Thomas Mahin (781) 932-7660

Southeast Regional Contact:

Robert Cady (617) 292-5713 or Richard Keith (508) 946-2784

Central Regional Contact:

Gustav Swanquist (617) 556-1083 or Paul Anderson (508) 792-7692

Western Regional Contact:

Stanley Linda (617) 292-5736 or Deirdre Cabral (413) 784-1100 x2148

Summary: State Revolving Loan Program.

Eligibility: Massachusetts municipalities and wastewater districts.

Match: Loans are subsidized, currently at 50% grant equivalency. (Approximately a no-interest loan.)

$ Range: In recent years the program has operated at an annual capacity of $150 to $200 million per year, representing the financing of 40-50 project annually.

Examples: 1. Project/ Design/ Construction of municipal water pollution abatement activities, including wastewater treatment facilities, correction of combined sewer overflows, wastewater collection and transmission facilities, nonpoint source projects (including Title 5), and infiltration/inflow removal.

2. Design and construction of projects to protect or improve public drinking water systems, including filtration, disinfestation, and distribution.

Schedule: Calendar Year Basis; applications due October 15.

<u>Community Septic Management Program</u>

Contact:	Northeast Regional Office:	Vivek Joshi (978) 661-7742
	Central Regional Office:	Joanne Kasper-Dunn (508) 792-7653 x3763
	Southeast Regional Office:	Pamela Truesdale (508) 946-2881
	Western Regional Office:	Jane Pierce (413) 784-1100 x2153

Summary: Loans for septic system planning and improvements.

Eligibility: Municipalities

Match: None

$Range: This program has already undergone two rounds of funding. Every community was given a chance to participate during the years 1996-1998. Currently available option: Possible grant (up to $15,000) to develop a regional or watershed based septic system management plan. Upon completion of the plan the municipality would receive a minimum $200,000 loan for upgrades. If the community is already participating in the program, and can demonstrate a need for additional funds, then the Regional Coordinator must be contacted through an “Expression of Interest”.

Schedule: For new applicants: A two page “Expression of Interest” is required. Call the Regional coordinator for the current schedule.

Municipal Recycling Grant Program

Contact: Brooke Nash: (617) 292-5984 / Peggy Harlow (617) 292-5861

Summary: Recycling equipment, educational materials, and technical assistance grants

Eligibility: Municipalities and regional groups - must provide recycling data sheet and have municipal Buy Recycled policy.

Match: Recycling trucks ($20,000 or trade in of old truck requested)

Replacement curbside set-out containers (50% match required)

Recycled paint (50% match required)

Re-refined motor oil (50% match required)

$ Range: No restrictions: FY 99 grants ranged from $7 - $112,654

Examples: Recycling grant items include public education information, set out containers, roll-off containers, recycling trucks, transfer trailers, hazardous household products equipment, recycled products, and technical assistance. New FY99 grant opportunities include storage sheds for collecting mercury-containing products, grants to pay for the recycling of electronics and mercury-containing products, technical assistance to increase participation in recycling programs, and re-refined motor oil.

Schedule: In FY99, the application process began in July and the deadline was in September. Grant awards were announced in late October.

Municipal Recycling Incentive Program (MRIP)

Contact: Brooke Nash: (617) 292-5984 / Joseph Lambert (617) 574-6875

Summary: Performance based grant that awards a per ton payment for primary recyclables collected through municipal programs.

Eligibility: Municipalities and regional groups - must meet minimum recycling criteria and elective criteria every 6 months (criteria are cumulative and increase every 6 months).

Match: None

$ Range: FY 98 payments ranged from $76-$124,649 (Based upon $4/ton for drop-off programs and $8/ton for curbside programs.)

Examples: FY 99 minimum criteria include: establish a municipal Buy Recycled Policy and tracking system; establish equal or "parallel" access to both solid waste and recycling collection services; expand recycling access to unserved residents.

FY 98 elective criteria include: Multiple choices in the areas of recycling access, recycling participation, and recycled product procurement.

Schedule: For past fiscal years, the first phase eligibility deadline was December and the second phase eligibility deadline was May. Call for more infomration.

Department of Fisheries, Wildlife, and Environmental Law Enforcement (DFWELE)

Urban Rivers Small Grants

Contact: Maria Van Dusen: (617) 626-1540

Summary: For projects that seek to restore urban rivers.

Eligibility: Municipalities and non-profit groups located in urbanized areas.

Match: No match requirement.

$ Range: $3,000 - $8,000

Examples: First year grants.

Schedule: Call for dates.

Clean Vessel Act Grants

Contact: Buell Hollister: (617) 626-1524

Summary: Funds boat pump-out facilities and dump stations for the proper disposal of sewage from recreational boats.

Eligibility: Municipalities, and private marinas with the support of municipalities.

Match:

$ Range:

Examples: A fixed station attached to a dock where boats can be serviced or a boat equipped with a pump-out which services boats while attached to a mooring.

Schedule: Please call with all inquiries.

Department of Food and Agriculture (DFA)

Agriculture Preservation Restriction (APR) Program

Contact: Carol Szocik: (508) 792-7712

Summary: Through the APR Program, the state offers to pay farmers the difference between the "fair market value" and the "agricultural value" of their farmland in exchange for a permanent deed restriction which precludes any use of the property that will have a negative impact on its agricultural viability.

Eligibility: Farmers owning farms 5 acres or larger.

Match:

$ Range:

Examples: Since 1980, deed restrictions have been placed on 468 farms totaling approximately 42,000 acres in 130 towns.

Schedule: The program is a rolling application process. If a farmer is interested, the APR Program should be contacted.

Farm Viability Program

Contact: Kent Lagee: (413) 529-0873

Summary: This program's purpose is to improve the economic bottom lines and environmental integrity of participating farms through the development and implementation of Farm Viability Plans. Financial agreements are made with participating farms upon the completion of such as plan which may include either the purchase of an agricultural covenant by the state for a term of 5 or 10 years, or payment for the implementation of the developed Farm Viability Plan.

Eligibility: Farms of 5 acres or larger.

Match:

$ Range:

Schedule: Applications are accepted in the spring. Call for more information.

Agro Environmental Technology Grant Program

Contact: Craig Richov: (508) 792-7711

Summary: Applied research, demonstration projects, and feasibility analysis which involve new or alternative production, processing, distribution or market access technologies, practices or organizational arrangements.

Eligibility: Public or private agencies or organizations, business and industry, educational institutions and local governments.

Match: Minimum 1 : 1

$ Range: Up to $50,000

Examples: Use of bio-controls for plant pests as an alternative to pesticide use, organizing a marketing cooperative, developing manuals and how to guides for the production of new agricultural or aquacultural crops.

Schedule: Annual RFR released in September, proposals due to by December 1st each year.

Massachusetts Highway Department (MassHwy)

TEA21 - Transportation Enhancement Funds

Contact: Linda Walsh: (617) 973-8052

Summary: Funds for environmental remediation of transportation impacts; transportation improvements including pedestrian and bicycle pathways.

Eligibility: Municipalities apply through regional planning agencies.

Match:

$ Range:

Examples: Barnstable Walkway to the Sea (land acquisition for harbor access); stormwater remediation in Mashpee.

Schedule: Call for more information.

Department of Housing and Community Development (DHCD)

Municipal Incentive Grant Program

Contact: Don Martin, Program Coordinator: (617) 727-7001, x404

Summary: The Municipal Incentive Grant Program (MIGs) is designed to assist local government officials in the planning, management and operation of cities and towns, and in the training of local officials. The program provides grants to pay for consultant assistance and, in some cases, hardware and software. MIGs funds enable communities, individually or working together, to address particular issues, define solutions and implement improvements in service delivery.

Eligibility: Must be a municipality, county government, or Regional Planning Agency. Maximum grants are $35,000 for local and $60,000 for regional projects.

Match:

$ Range:

Examples: Growth management strategies, affordable housing strategies, design of regional arrangements for service delivery, creation or enhancement of fiscal management practices, development of Geographic Information Systems (GIS).

Schedule: Call for more information.

Community Development Action Grant (CDAG) Program

Contact: Carol Harper, Program Manager: (617) 727-7001 x483

Summary: Primarily Infrastructure support for projects promoting economic development. Project must demonstrate public benefit. CDAG funding limited to 50% of the total project cost; applicant must demonstrate financing commitments of public and private sources. CDAG funds "minimum

amount necessary to make the project feasible." All matching funds must be in place before CDAG funds can be expended.

Match: $.50 local; $1.00 CDAG; $2.50 private.

$ Range: $100,000 to $1,000,000.

Examples: Extension of water and/or sewer service to an industrial park. Road construction/improvement in industrial/commercial area.

Eligibility: Municipalities only. These funds are to be utilized on public infrastructure projects and are intended to address substandard or blighted conditions. Land to be improved must be publicly owned. Pre-application process, followed by full application.

Schedule: Rolling admission program.

Community Development Block Grant Program

Contact: Toni Hall, Community Development Specialist: (617) 727-7001, x428
Robert Shumeyko, Program Manager, (617) 727-7001, x435

Summary: Support of community and economic development projects that benefit low and moderate income persons. Funding source: U.S. Department of Housing and Urban Development. DHCD administers competitive grant program for state's non-entitlement communities (e.g., under 50,000 population)

Eligibility: Municipalities under 50,000 population, either individually or in regional arrangements. Contact DHCD for application.

Match:

$ Range:

Examples: Housing rehabilitation (includes septic system repairs), water and sewer Improvements, public facilities construction and improvements, e.g., parks and playgrounds, planning, economic development, neighborhood revitalization. List of eligible projects is extensive. Call for details.

Schedule: Application for Community Development Fund I and II were due on or before August 1 in past years. (Community Development Fund usually has one competitive round yearly.)

Grant Program for the Demolition of Abandoned Buildings

Contact: Marilyn Contreas, Program Coordinator: (617) 727-7001, x408

Summary: Grants to demolish abandoned buildings which are posing severe health and safety risks.

Eligibility: Municipalities. Must demonstrate health and safety risk factors caused by abandoned structures. Maximum grant award of $250,000.

Match:

$ Range:

Example: Removal of abandoned residential and commercial properties primarily in densely settled areas.

Schedule: Rolling admission. Call for details.

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This list is also available from the MCZM web page at:
http://www.magnet.state.ma.us/czm/

For partial listing of private funds available see http://www.agmconnect.org

For information on federal funding sources for watershed protection, see the *Catalog of Federal Funding Sources for Watershed Protection* at http://www.epa.gov/OWOW/watershed/wacademy/fund.html.

Appendix M: Public Participation & Meeting Schedule

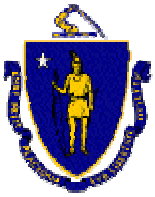
SUMMARY OF PUBLIC PARTICIPATION PROCESS
TEN MILE RIVER WATERSHED ACTION PLAN

Subcommittee Meetings

Date	Agenda Items
4/6/00	Watershed Team meeting; subcommittee formed
4/28/00	first subcommittee meeting; develop goals & objectives
5/17/00	compile objectives & actions
8/23/00	preparation for first public meetings
2/8/01	prioritize actions
3/7/01	prioritize actions; strategy for municipal involvement
5/16/01	prioritize actions; impervious cover analysis
5/30/01	action matrix

Public Participation

Date	Action
2/3/00	Watershed Team Meeting; overview and kickoff
4/18/00	Written invite to participate and provide information
9/11/00	Watershed Team Meeting; update status
9/13/00	Public Forum at Murray Church, Attleboro (#21)
9/21/00	Public Forum at Seekonk Public Library (#15)
3/28/01	Meeting with Municipal Officials, No. Attleborough & Plainville
5/3/01	Meeting with Municipal Officials, Attleboro
6/18/01	Meeting with Board of Selectmen, Plainville
6/1/01 – 6/25/01	Draft Plan available for comment on website's of Team and Tellus
6/6/01	e-mail notice & plan to community and agency partners
6/12/01	Mass mailing notice; draft plan mailed to partners
6/7/01	Watershed Team Meeting, review draft plan
6/18/01	Public Forum, Plainville (#13)
6/20/01	Public Forum, No. Attleborough (#7)



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